TROVIS 5500 Automation System
TROVIS 5575 Heating and District Heating Controller

SAMSON

Mounting and Operating Instructions

EB 5575 EN

Firmware version 2.14

Edition January 2014

CE

TROVIS®
Electronics from SAMSON

Safety instructions

▶ The device may only be assembled, started up or operated by trained and experienced personnel familiar with the product. Proper shipping and appropriate storage are assumed.

▶ The controller has been designed for use in electrical power systems. For wiring and maintenance, you are required to observe the relevant safety regulations.

Controller versions

The TROVIS 5575 Heating Controller is available in various versions. The type designation registered on the nameplate of the controller indicates the controller version:

Type designation (nameplate)	Version
TROVIS 5575-000x Var.-ID 1058686 and 1621285	Standard controller **with** illuminated display background and **with** device bus
TROVIS 5575-001x Var.-ID 1063809 and 1621288	Controller with illuminated display background, **with** device bus and **with** an additional pump output
TROVIS 5575-002x Var.-ID 1104934 and 1551895	Controller **without** illuminated display background and **without** device bus

These instructions apply to all versions of the heating controller.

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Modifications to controller firmware in comparison to previous versions	
1.70 (previous)	**1.71** (new)
	Err 2 message (default setting loaded) is not displayed anymore. See section 8.1.
	Single error messages to be forwarded over the device bus can be selected.
1.71 (previous)	**1.82** (new)
	An interrupted drying of jointless floors can be continued by selecting the restarting stages *START temperature maintaining phase* or *START temperature reduction phase*. See section 5.3.
	During thermal disinfection, the *Hold time of disinfection temperature* can be used to determine how long the disinfection temperature must be maintained within the adjusted time period to rate the process successful. See section 6.10.
	Besides the release of single control circuits, the release of the controller is possible over the binary input. See section 7.8.
1.82 (previous)	**1.90** (new)
	In the configuration level CO1, the *Four-point characteristic* function can also be configured for systems Anl 3.x. See CO1 -> F11
1.90 (previous)	**1.95** (new)
	The priority operation (reverse control and set-back operation) can be set regardless of the time and temperature behavior of the system. See sections 6.8.1 and 6.8.2.
1.95 (previous)	**2.00** (new)
	New system (Anl 10.5) added. Refer to section 4.
	The limit switch for creep feed rate limitation can also be connected to input RüF1. In previous versions, it could only be connected to the binary input (terminals 04/12). Refer to section 7.10.3.
	A primary controller linked over the device bus can receive and process the demand of downstream controllers (version 2.00 and higher) optionally in control circuit Rk1 and/or Rk2. Refer to section 7.11.1.
2.00 (previous)	**2.12** (new)
	New hydraulic system 11.6 (refer to page 52)
	New cooling control function (refer to section 5.10)
	The cooling circuit causes a reversal of the operating direction and a minimum limitation of the return flow temperature in Rk1/2.
2.12 (previous)	**2.13** (new)
	The priority operation (reverse control and set-back operation) can be activated for system Anl 4.5 either for one heating circuit or for both heating circuits. Refer to section 6.8.
2.13 (previous)	**2.14** (new)
	The cooling control function can be implemented in systems with and without outdoor sensor (refer to section 5.10)

1   Operation

The controller is ready for use with the default temperatures and operating schedules.
On start-up, the **current time and date** need to be set at the controller (–> section 1.5).

1.1   Operating elements

The operating controls are located in the front panel of the controller and protected by a
Plexiglas door.

1.1.1 Rotary pushbutton and changeover key
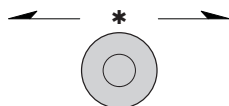
Rotary pushbutton

Turn $\circlearrowleft$:
Display, select parameters and function blocks

Press $*$:
Confirm adjusted selection or settings

Changeover key
(use pen or any other pointed item to press)

Press to switch between operating level and configuration/parameter level

1.1.2 Rotary switches

Use the three rotary switches to adjust the required operating mode (icons on the left) and the relevant parameters (icons on the right).
The top and middle switches are assigned to the heating circuits (see page 127). The rotary switch in the middle is not used in systems without a second heating circuit.
The bottom switch is assigned to the DHW circuit.

Rotary switch to adjust the operating modes of the heating circuit
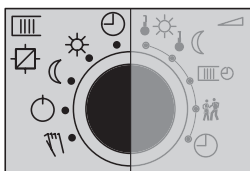
- ⊕   Automatic/time-controlled operation
with switchover between day and night modes

- ☼   Day mode (rated operation)

- ☾   Night mode (reduced operation)

- ○   Control operation deactivated, frost protection only

- ᨓ   Manual operation: correction value adjusted in percent
and activation/deactivation of the pumps

Rotary switch to adjust the parameters of the heating circuit
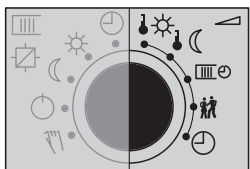
- ☀☼   Day set point (rated room temperature)

- ☀☾   Night set point (reduced room temperature)

- ▥⊕   Times-of-use for heating

- 桑   Party mode

- ⊕   Controller time: setting current time, date and year

Rotary switch to adjust the operating modes of the DHW circuit
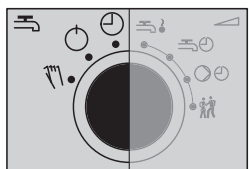
- ⊕   Automatic/time-controlled operation
with switchover between times when DHW heating
is permissible/impermissible

- ○   DHW heating deactivated, frost protection only

- ᨓ   Manual operation: correction value adjusted in percent
and activation/deactivation of the pumps

Rotary switch to adjust the parameters of the DHW circuit
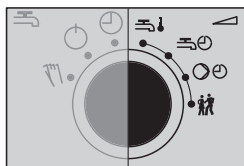
🚰🌡 Set point for DHW temperature

🚰🕐 Times-of-use for DHW heating

◯🕐 Times-of-use for DHW circulation pump

👫   Party mode

Note: If several rotary switches are set to "Parameter" (right side), ☰ blinks on the display. The controller cannot be operated.

1.2 Operating modes

Day mode (rated operation) ☼

Regardless of the programmed times-of-use and summer mode, the set points relevant for rated operation are used by the controller.

Night mode (reduced operation) ☾

Regardless of the programmed times-of-use, the set points relevant for reduced operation are used by the controller.

Automatic/time-controlled operation 🕐

During the programmed times-of-use, the controller works in rated operation. Outside these times-of-use, the controller is in reduced operation, unless control operation is deactivated depending on the outdoor temperature. The controller switches automatically between both operating modes.

Manual operation 🖐

Valves and pumps can be controlled manually (–> section 3).

1.3 Display

During operation, the display indicates the current time as well as information about the operation of the controller. The times-of-use are represented by black squares below the row of numbers at the top of the display. Icons indicate the operating status of the controller.
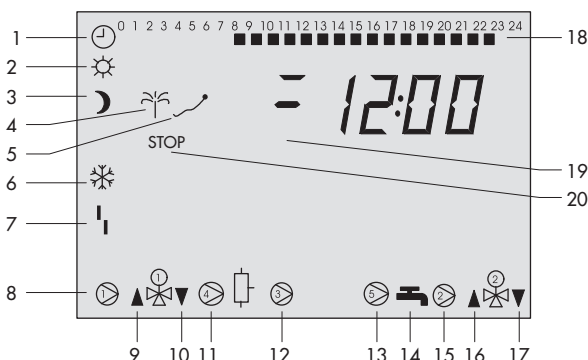
1 Automatic operation	8 Circulation pump UP1*	16 Valve Rk2: OPEN
2 Day mode (rated operation)	9 Valve Rk1: OPEN	17 Valve Rk2: CLOSED
	10 Valve Rk1: CLOSED	18 Time-of-use
3 Night mode (reduced operation)	11 Storage tank charging pump SLP	19 Control circuit assignment:
4 Vacation mode	12 Output bA9*	$-$: Heating circuit 1
5 Public holiday mode	13 Circulation pump UP5*	$=$: Heating circuit 2
6 Frost protection	14 DHW demand	20 OT dependent control deactivated
7 Operational fault	15 Circulation pump UP2*	

* UP1, UP2, SLP, UP5, bA9 indicate possible choices for pump selection in manual operating mode.

Fig. 1 · Icons

The controller status can be displayed in operating level (–> section 1.4).

» **TROVIS 5575-000x (Var.-ID 1058686 and 1621285) and TROVIS 5575-001x (Var.-ID 1063809 and 1621288):**
An illuminated display indicates that the controller is being operated or a fault exists.

» **TROVIS 5575-002x (Var.-ID 1104934 and 1551895):**
Version without illuminated display

1.4 Displaying data

The time, date, public holidays and vacation periods as well as the temperatures of con-
nected sensors and their set points can be retrieved and displayed with the help of the rotary
pushbutton.

Note: *Data can also be viewed in manual operating mode 〲 .*
*To do so, select **Info**, confirm and proceed as described below.*

Proceed as follows:

〈〉 Select value.
Depending on the configuration of the controller, the different data points are displayed:

__:__ Time

⌂ Room temperature, heating circuit 1, 2

⌂ Outdoor temperature

▥ Temperature at flow sensor VF, heating circuit 1, 2

⤤ Temperature at flow sensor VF1, primary heat exchanger circuit

⤤▯ Temperature at flow sensor VF2, DHW circuit

▯ Temperature at solar collector sensor VF3

⬳ Temperature at return flow sensor RüF

⬳▯ Temperature at return flow sensor RüF, DHW circuit

▯ Temperature at storage tank sensor SF1

▯ Temperature at storage tank sensor SF2

▯ Temperature at storage tank sensor SF2 of the solar circuit

⤤▯ Temperature at flow sensor VF4

✳ Compare the set point/limit value and the actual value.
Press the rotary pushbutton to display the time and date.

1.5 Setting the controller time

The current time and date need to be set immediately after start-up and after a power failure of more than 24 hours has occurred. This is the case when the time blinks on the display.

Proceed as follows:
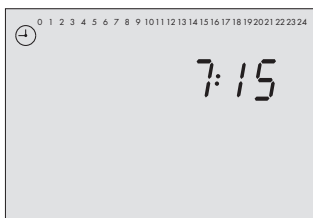
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 ⏲ 7:15	Turn the top rotary switch to position ⏲ "Controller time" (right side). Display shows: time 〈〉 Edit the controller time.
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 2000	✳ Confirm the adjusted time. Display shows: year 〈〉 Edit the year.
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 27.11	✳ Confirm the adjusted year. Display shows: date (day.month) 〈〉 Edit the date. ✳ Confirm the adjusted date. Display shows: time Return the rotary switch to the required operating mode (left side).

Note: The correct time is guaranteed after a power failure of 24 hours. Normally, the correct time is still retained at least 48 hours after a power failure.

1.6   Setting the times-of-use

Three times-of-use can be set for each day of the week.
If only one time-of-use is required, the start and stop times of the second time-of-use must be set to identical values. In this case, the third time-of-use is not displayed.
If only two times-of-use are required, the start and stop times of the third time-of-use must be set to identical values.

The times-of-use for the different control circuits are adjusted at the rotary switches **one after the other**:

Times-of-use	Rotary switch	Position
Heating circuit 1*	Top	▥ ⏱
Heating circuit 2*	Middle	▥ ⏱
DHW heating*	Bottom	🚰 ⏱
Circulation pump	Bottom	◯ ⏱

* Refer to page 127 for assignment

Parameters	WE*	Range of values
Time period/day	1–7	1–7, 1, 2, 3, 4, 5, 6, 7 with 1–7 = daily, 1 = Monday, 2 = Tuesday, …, 7 = Sunday
Start first time-of-use	06:00	00:00 to 24:00 h; in steps of 15 minutes
Stop first time-of-use	22:00	00:00 to 24:00 h; in steps of 15 minutes
Start second time-of-use	22:15	00:00 to 24:00 h; in steps of 15 minutes
Stop second time-of-use	22:15	00:00 to 24:00 h; in steps of 15 minutes
Start third time-of-use	–	00:00 to 24:00 h; in steps of 15 minutes
Stop third time-of-use	–	00:00 to 24:00 h; in steps of 15 minutes

* Default values (WE) valid for heating circuit 1/primary heat exchanger circuit (top rotary switch)

Proceed as follows:
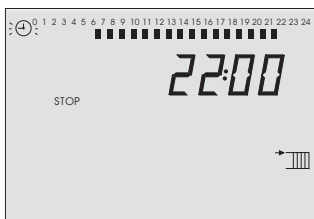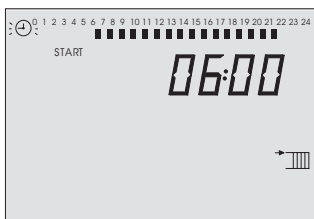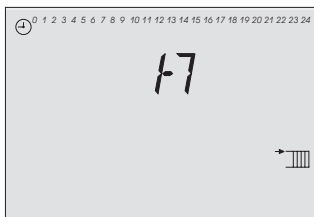
Turn appropriate rotary switch to position "Times-of-use".
Display shows: *1–7*

⟲ Select period/day for which the times-of-use are to be valid:
1–7 = every day,
1 = Monday, 2 = Tuesday, ..., 7 = Sunday

✳ Activate editing mode for period/day.
Display shows: **START**, 🕐 blinks

⟲ Edit start time (steps of 15 minutes).

✳ Confirm start time.
Display shows: **STOP**

⟲ Edit stop time (steps of 15 minutes).

✳ Confirm stop time.
Display shows: **START**
The second time-of-use is set like the first time-of-use.

To set the times-of-use for each day, repeat the instructions in the fields highlighted in gray.

Return the rotary switch to the required operating mode (left side).

Note: Do not use the 1–7 menu to check the programmed times-of-use.
If this menu is opened after the times-of-use have been programmed, the schedule programmed for Monday is also adopted for all other days of the week.

1.7   Setting party mode

Using the **Party mode** function, the controller continues or activates the rated operation of the controller during the time when the party timer is active, regardless of the adjusted times-of-use. The party timer begins when the rotary switch has been returned to operating mode ⊕ "Automatic". When the party timer has elapsed, the party timer is reset to 00:00.

The party modes for the different control circuits are adjusted at the rotary switches **one after the other**:

Party timer	Rotary switch	Position
Heating circuit 1*	Top	👫
Heating circuit 2*	Middle	👫
DHW circuit*	Bottom	👫

* Refer to page 127 for assignment

Parameter	WE	Range of values
Continue/activate rated operation	0 h	0 to 48 h

Proceed as follows:

Turn appropriate rotary switch to "Party mode".
Display shows: **00:00** or the remaining time of the adjusted party timer

⟨⟩ Edit required length of the one-off time-of-use.

Return the rotary switch to operating mode ⊕ "Automatic" (left side).

Note: *The time elapsing on the party timer is displayed in steps of 15 minutes.*

1.8   Activating extended operating level

After the key number 1999 has been entered, the following information can be viewed and edited after the data points listed in section 1.4 have been displayed:

▶ Flow rate
▶ Heat capacity
▶ Public holidays ╱ (can be changed)
▶ Vacation periods ✲ (can be changed)
▶ Valve positions
▶ Switching states of the binary inputs
▶ Info 2 · The following data are shown in the same sequence as shown below:

`0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24` Controller ID

`0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24` Memory capacity of data logging module (section 9.1)

`0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24` 255

`0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24` Operating hours of solar circuit pump (refer to section 6.4)

`0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24` Water flow sensor (refer to section 6.3)

Opening the extended operating level:

⇨ Switch to configuration and parameter level.
    Display shows: *0 0 0 0*

◖◗ Set key number 1999.

✳ Confirm key number.
    Display shows: time

Note:
– *The additional information is hidden when the key number 1999 is entered again.*
– *The key number 1999 cannot be used to change the controller configuration and parameterization. A separate key number exists for configuration and parameterization. Refer to section 2.*

1.8.1 Setting public holidays

On public holidays, the times-of-use specified for Sunday apply. A maximum of 20 public holidays may be entered.

Parameter	WE	Level / Range of values
Public holidays	–	Extended operating level / 01.01 (1 Jan) to 31.12 (31 Dec)

Proceed as follows:

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
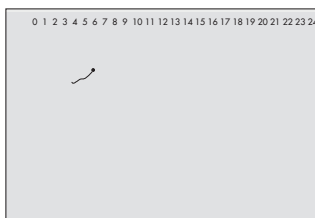
() In extended operating mode, select "Public holidays". Display shows: ⟋

✳ Open data point "Public holidays".

() If applicable, select – – – –.

✳ Activate editing mode for public holiday. ⟋ blinks.

() Edit required public holiday.

✳ Confirm public holiday.

To enter additional public holidays, re-select – – – – and repeat the steps in the fields highlighted in gray.

✳ Exit data point "Public holidays".

Note: Public holidays can also be entered in parameter level PA5 (–> section 2.3).

Deleting a public holiday:

() Under data point "Public holidays", select the holiday you wish to delete.

✳ Confirm selection.

() Select – – – – .

✳ Delete the public holiday.

Note: Public holidays that are not assigned to a specific date should be deleted by the end of the year so that they are not carried on into the following year.

1.8.2 Setting vacation periods

During vacation periods, the controller constantly remains in reduced operating mode. A maximum of 10 vacation periods can be entered. Each vacation period can be assigned separately to the heating circuits Rk1 to Rk2 and/or to the DHW circuit.

Parameter	WE	Level / Range of values
Vacation period (START, STOP)	–	Extended operating level / 01.01 to 31.12

Proceed as follows:
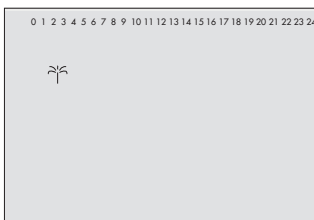
() In extended operating level, select "Vacation periods". Display shows: ⁂

✳ Open data point "Vacation periods". Display shows: *START*, – –.– – (day.month)

() If applicable, select – – – – .

✳ Activate editing mode for start date of vacation period. ⁂ blinks.

() Edit start date of vacation period.

✳ Confirm start date of vacation period.

() Edit end of vacation period. Display shows: *STOP*, – –.– – (day.month)

✳ Confirm end date of the vacation period. Black squares under 1 to 4 at the top of the display indicate the assignment of the vacation periods to the individual control circuits.

() Select the control circuit to which the current vacation period should apply.
■¹ Current vacation period applies to circuit Rk1
■² Current vacation period applies to circuit Rk2
■³ –
■⁴ Current vacation period applies to DHW circuit
The vacation period can be assigned to a single control circuit or any combination of all three control circuits (Rk1 to Rk2, DHW circuit).

To enter additional vacation periods, re-select – – – – and repeat the steps in the fields highlighted in gray.

✳ Exit data point "Vacation periods".

Note: Vacation periods can also be entered in parameter level PA5 (–> section 2.3).

Deleting vacation periods:

() Under "Vacation periods", select the start date of the period you wish to delete.

✳ Confirm selection.

() Select – – – – .

✳ Delete vacation period.

Note: Vacation periods should be deleted by the end of the year so that they are not carried on into the following year.

1.9   Setting room and DHW temperature set points

For the heating circuits, the required room temperatures during the day (*Day set point*) and during the night (*Night set point*) can be entered.
In the DHW circuit, the temperature you wish the DHW to be heated to can be adjusted.

The temperature set points for the different control circuits are adjusted at the rotary switches **one after the other**:

Required temperature set point	Switch	Position
Heating circuit 1*: Day set point	Top	🌡☼
Heating circuit 1*: Night set point	Top	🌡☾
Heating circuit 2*: Day set point	Middle	🌡☼
Heating circuit 2*: Night set point	Middle	🌡☾
DHW circuit*: DHW temperature set point	Bottom	🚰🌡

* Refer to page 127 for assignment

Parameter	WE	Rotary switch / Range of values
Day set point	20 °C	Top, middle / 0 to 40 °C
Night set point	15 °C	Top, middle / 0 to 40 °C
DHW temperature set point	55 °C	Bottom / Min. to max. DHW temperature

Proceed as follows:

Turn appropriate rotary switch to "Set point temperature".
Display shows: temperature value

〈〉 Change temperature value.

Return the rotary switch to the required operating mode (left side).
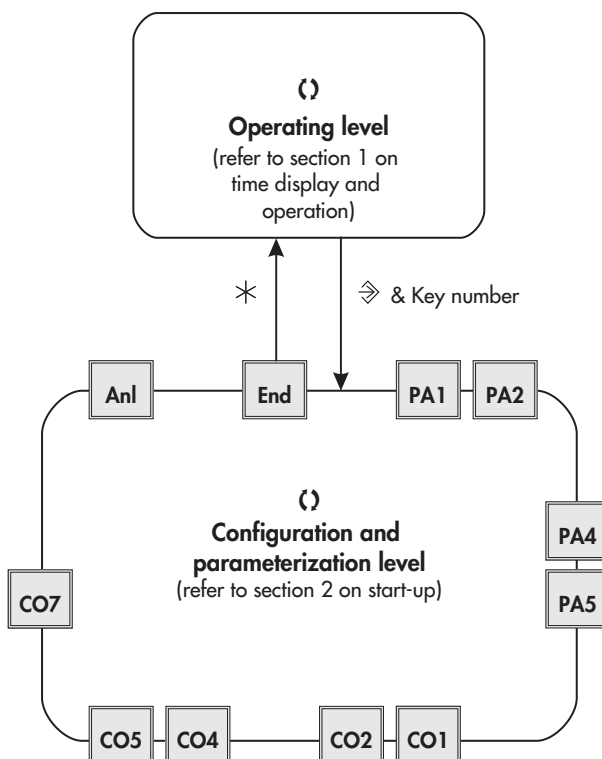
PA1/CO1: Heating circuit Rk1 (⎺)
PA2/CO2: Heating circuit Rk2 (═)
PA4/CO4: DHW heating
PA5/CO5: System-wide
      CO7: Device bus
      Anl: System code number

Fig. 2 · Level structure of TROVIS 5575

» **TROVIS 5575-002x (Var.-ID 1104934 and 1551895):**
  Version without device bus: Settings in CO7 level do not apply.

2 Start-up

The modifications of the controller configuration and parameter settings described in this section can only be performed after the valid key number has been adjusted.

The valid key number for initial start-up can be found on page 141. To avoid unauthorized use of the key number, remove the page or make the key number unreadable. In addition, it is possible to adjust a new, customized key number (–> section 7.15).

2.1 Setting the system code number

23 different hydraulic schemes are available in the standard version TROVIS 5575-000x (Var.-ID 1058686 and 1621285) and in the TROVIS 5575-002x version (Var.-ID 1104934 and 1551895) . The TROVIS 5575-001x version (Var.-ID 1063809 and 1621288) has three additional hydraulic schemes. Each system configuration is represented by a system code number (Anl). The different schematics are dealt with in section 4. Available controller functions are described in sections 5, 6 and 7.

Changing the system code number resets previously adjusted function blocks to their default values (WE). Function block parameters and parameter level settings remain unchanged. The system code number is adjusted in configuration level.

Proceed as follows:

⇨ Switch to configuration and parameter level.
 Display shows: **0 0 0 0**

◖◗ Set valid key number.

✳ Confirm key number.
 Display shows: **PA1**

◖◗ Select **Anl.**

✳ Activate editing mode for the system code number.

◖◗ Edit system code number.

✳ Confirm system code number.
 Display shows: **End**

✳ Return to operating level.

2.2 Activating and deactivating functions

A function is activated via the associated function block. The numbers 0 to 24 in the top row of the display represent the respective function block numbers. When a configuration level is opened, the activated function blocks are indicated by a black square on the right-hand side below the function block number. For more details on function blocks, refer to section 12.1.

The functions are grouped by topics:

▶ CO1: Heating circuit Rk1 (‾)
▶ CO2: Heating circuit Rk2 (=)
▶ CO3: Not used
▶ CO4: DHW heating
▶ CO5: System-wide functions
▶ CO6: Not used
▶ CO7: Device bus

Proceed as follows:

⇰ Switch to configuration and parameter level.
Display shows: *0 0 0 0*

◖◗ Set valid key number.

✳ Confirm key number.
Display shows: *PA1*

◖◗ Select configuration level (-> Fig. 2).

✳ Open configuration level.

◖◗ Select function block.
Activated function blocks are marked by "- 1".
Deactivated function blocks are marked by "- 0".

✳ Activate editing mode for the function block.
F__ blinks.

◖◗ Activate the function block.
Display shows: *F__ - 1*
An activated function block is indicated by a black square below (right) the function block number in the top row of the controller display.

Or:

◖◗ Deactivate the function block.
   Display shows: *F__ - 0*

◖◗ ✳ Confirm settings.
   If the function block is not closed, further function block parameters can be adjusted.
   Proceed as follows:
   Make the required changes and confirm.
   If applicable, the next function block parameter is displayed.
   Confirm all parameters to exit the opened function block.

To adjust additional function blocks, repeat the steps in the fields highlighted in gray.

◖◗ Select *End*.

✳ Exit configuration level.

◖◗ Select *End*.

✳ Return to operating level.

2.3 Changing parameters

Depending on the adjusted system code number and the activated functions, not all parameters listed in the parameter list in the Appendix (–> section 12.2) might be available.
The parameters are grouped by topics:

▶ PA1: Heating circuit Rk1 (‾)
▶ PA2: Heating circuit Rk2 (=)
▶ PA3: Not used
▶ PA4: DHW heating
▶ PA5: System-wide functions
▶ PA6: Not used
▶ PA7: Not used

Proceed as follows:

⇗ Switch to configuration and parameter level.
   Display shows: *0 0 0 0*

() Set valid key number.

✳ Confirm key number.
   Display shows: *PA1*

() Select parameter level (-> Fig. 2).

✳ Open parameter level.

() Select required parameter.

✳ Activate editing mode for the parameter.

() Edit the parameter.

✳ Confirm the parameter.

To adjust additional parameters, repeat the steps in the fields highlighted in gray.

() Select *End*.

✳ Exit parameter level.

() Select *End*.

✳ Return to operating level.

2.4 Calibrating the sensors

The connected sensors are calibrated in configuration level CO5.

The following applies:

▶ CO5 -> F01 - 1, CO5 -> F02 - 0, CO5 -> F03 - 0: Pt 1000 (Pt 100) sensors (default)
▶ CO5 -> F01 - 0, CO5 -> F02 - 0, CO5 -> F03 - 0: PTC (Pt 100) sensors
▶ CO5 -> F01 - 0, CO5 -> F02 - 1, CO5 -> F03 - 0: NTC (Pt 100) sensors
▶ CO5 -> F01 - 1, CO5 -> F02 - 1, CO5 -> F03 - 0: Ni 1000 (Pt 100) sensors
▶ CO5 -> F01 - 0, CO5 -> F02 - 0, CO5 -> F03 - 1: Pt 500 (Pt 100) sensors

The resistance values of the sensors can be found on page 128.

If the temperature values displayed at the controller differ from the actual temperatures, the measured values of all connected sensors can be changed or readjusted. To calibrate a sensor, the currently displayed sensor value must be changed such that it corresponds with a temperature value (reference value) measured directly at the point of measurement.
Sensor calibration is to be activated in CO5 via function block F20.
An improper sensor calibration can be deleted by setting F20 - 0.

Proceed as follows:

⇨ Switch to configuration and parameter level. Display shows: *0 0 0 0*

() Set valid key number.

✷ Confirm key number. Display shows: *PA1*

() Select configuration level CO5.

✷ Open configuration level CO5.

() Select function block F20.

✷ Activate editing mode for function block F20.

() Select appropriate sensor icon:

⌂ Room sensor RF, heating circuits 1, 2

⌂ Outdoor sensor AF1

▥ Flow sensor VF, heating circuits 1, 2

▱ Flow sensor VF1, primary heat exchanger circuit

▱ Flow sensor VF2, DHW circuit

Solar collector sensor VF3

Return flow sensor RüF

Temperature at return flow sensor RüF, DHW circuit

Storage sensor SF1

Storage sensor SF2

Storage sensor SF2 for solar circuit

Flow sensor VF4
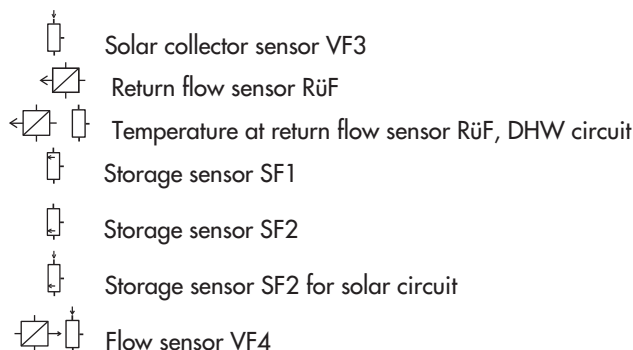
✳ Display measured value.
Measured value blinks.

() Correct measured value.
Read the actual temperature directly from the thermometer at the point of measurement and enter this value as reference temperature.

✳ Confirm corrected measured value.

Additional sensors are calibrated similarly.

() Select *End*.

✳ Exit configuration level.

() Select *End*.

() ✳ Return to operating level.

2.5 Resetting to default values

All parameters in parameter levels PA1, PA2 and PA5 adjusted with the rotary switches, except for the maximum flow temperature and the return flow limiting temperature in PA1/PA2, can be reset to their default values (WE).

Proceed as follows:

⇗ Switch to configuration and parameter level.

() Set key number 1991.

✳ Confirm key number.

3   Manual operation

Switch to manual operating mode to configure all outputs (see wiring diagram in section 11).

Manual operation for the different control circuits is adjusted at the rotary switches:

Manual operation	Rotary switch	Position
Heating circuit 1*	Top	〽
Heating circuit 2*	Middle	〽
DHW circuit*	Bottom	〽

* Refer to page 127 for assignment

Proceed as follows:

Turn appropriate rotary switch to 〽 "Manual operation".

⟨⟩ Select:
   POS_ : Correction value in percent
   UP_: Activation of the circulation pump
   SLP: Activation of the storage tank charging pump

✳ Confirm selection.
   Display blinks.

⟨⟩ Edit the correction value or activate/deactivate the circulation pump etc.

✳ Confirm edited settings.
   The modified values remain active as long as the controller is in manual mode.

   Return the rotary switch to the required operating mode (left side).
   Manual operation of the selected control circuit is deactivated by switching to any other operating mode.

Note: Simply setting the rotary switch to 〽 "Manual operation" does not have any affect on the outputs. You have to actually enter a correction value or activate/deactivate the pumps to configure the outputs.
*In manual operating mode, **frost protection** (–> section 7.2) is not activated.*

---

4   Systems

23 (26 in TROVIS 5575-001x with Var.-ID 1063809 and 1621288) different hydraulic schemes are available.
The systems can be designed as primary or secondary systems. The fundamental hydraulic differences between a primary and a secondary system are illustrated in Fig. 3.

▸ 1. A mixing valve replaces the heat exchanger in the heating/DHW circuit
▸ 2. A storage tank charging pump replaces the primary solenoid/thermoelectric valve

Fig. 3 · Differences between primary and secondary systems
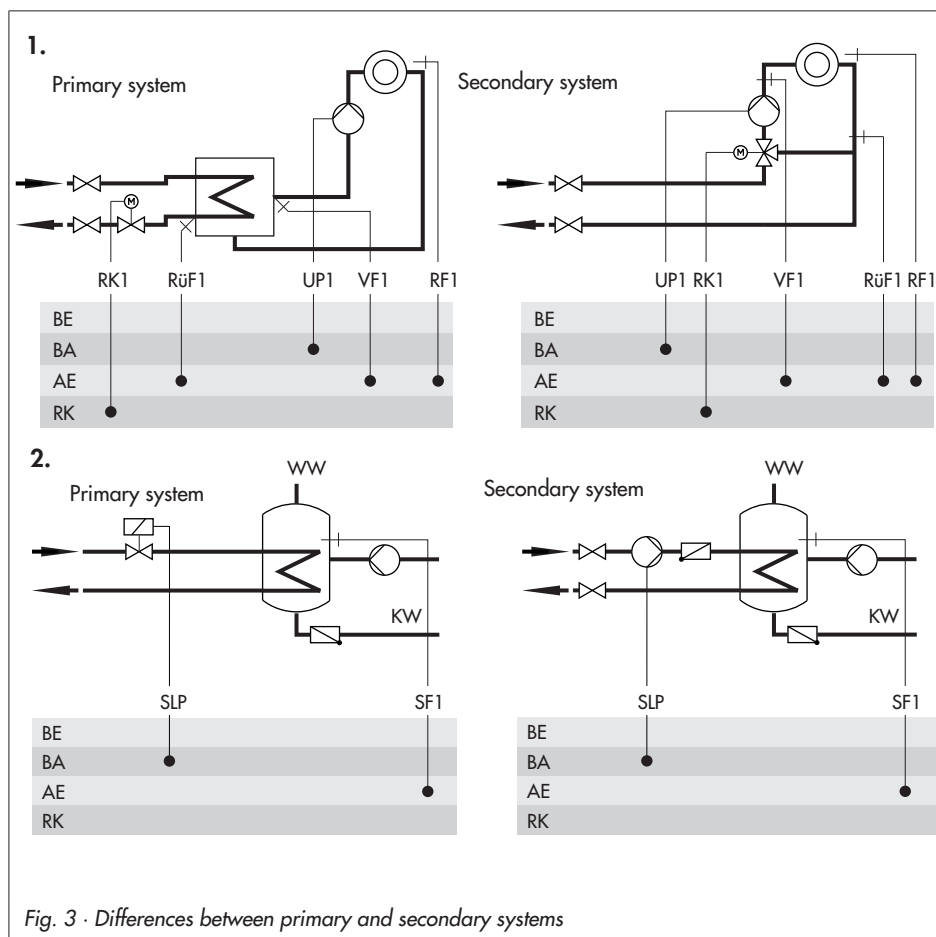
The controller settings do not have to be changed.

Boiler systems:
Single-stage boiler systems can be configured to include any system whose heating circuits and DHW circuit include just one heat exchanger. These systems are Anl 1.0, 1.5, 1.6, 2.x, 3.x, 4.0 and 4.1.
The boiler can be controlled by an on/off output (CO1 -> F12 - 0).

Fig. 4 · Configuration of a boiler system
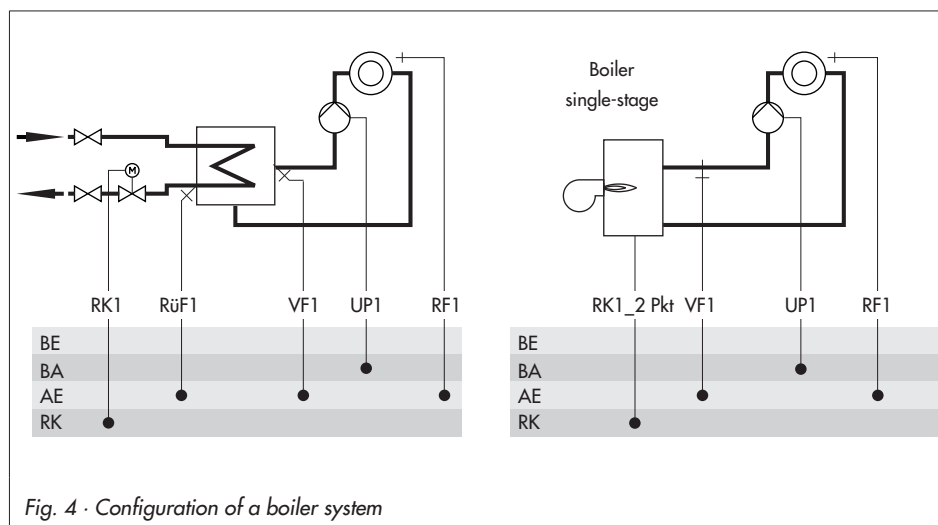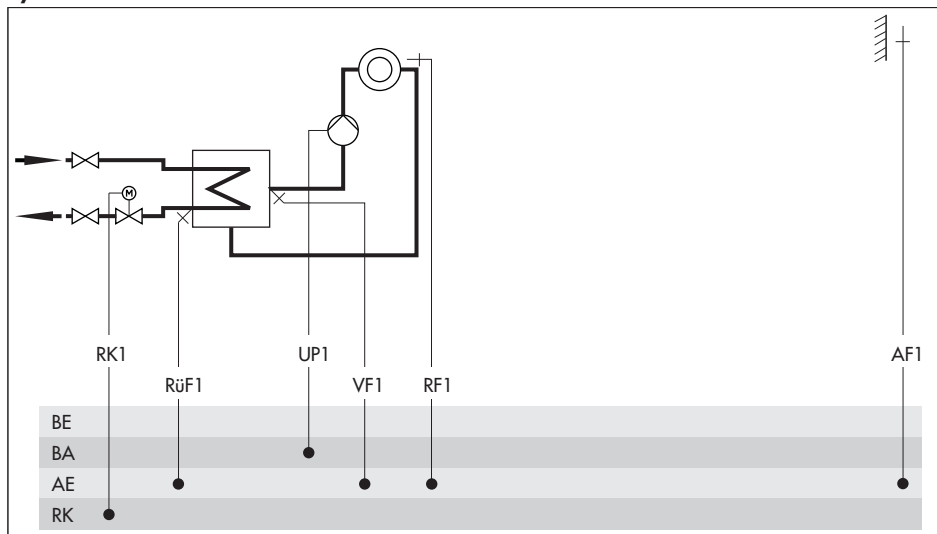
System Anl 1.0

Default settings	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)

Systems Anl 1.1 to 1.3
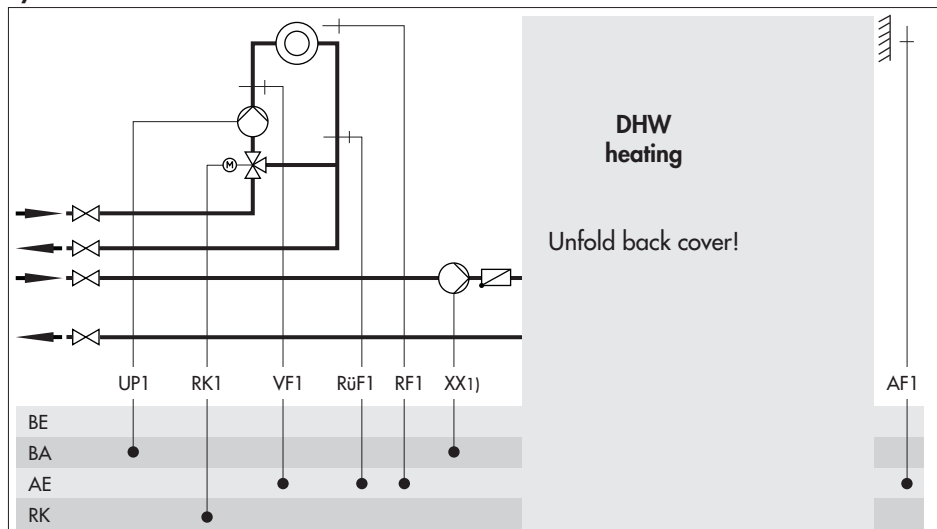
System	Anl 1.1	Anl 1.2	Anl 1.3
Type of DHW heating	Type 1	Type 2	Type 3
[1] XX =	SLP	BA9	SLP
Integration of flow sensor VF4	Possible	Possible	–
ZP integration with CO4 -> F10 - 1 (broken line, see cover)	–	Not possible	–
Note	–	**Only** secondary system	–
Default setting			
CO1 -> F01	- 0 (without RF1)	- 0 (without RF1)	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)	- 1 (with AF1)	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)	- 0 (without RüF1)	- 1 (with RüF1)
CO4 -> F01	- 1 (with SF1)	- 1 (with SF1)	- 1 (with SF1)
CO4 -> F02	- 0 (without SF2)	- 1 (with SF2)	- 0 (without SF2)
CO4 -> F05	- 0 (without VF4)	- 0 (without VF4)	- 0 (without VF4)

System Anl 1.5
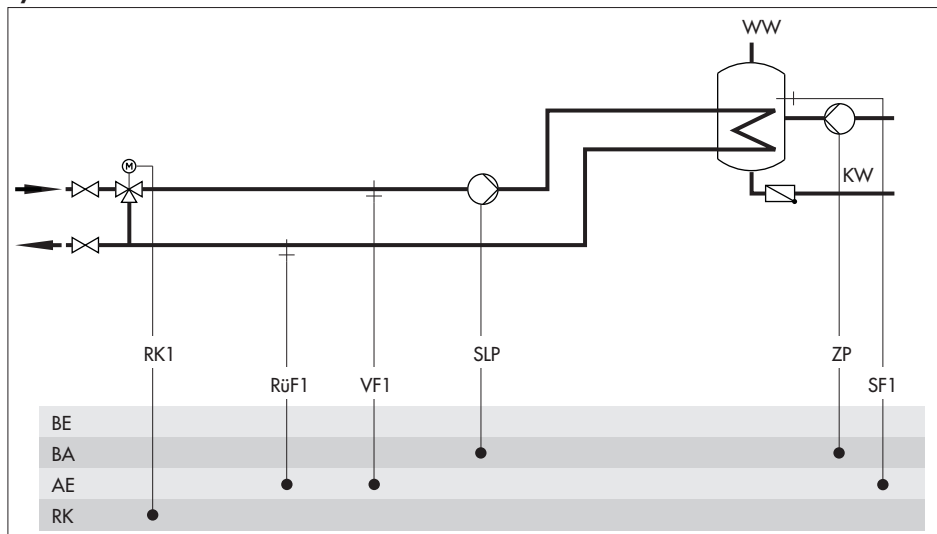
Default setting	
CO1 -> F03	- 1 (with RüF1)
CO4 -> F01	- 1 (with SF1)
CO4 -> F02	- 0 (without SF2)

System Anl 1.6
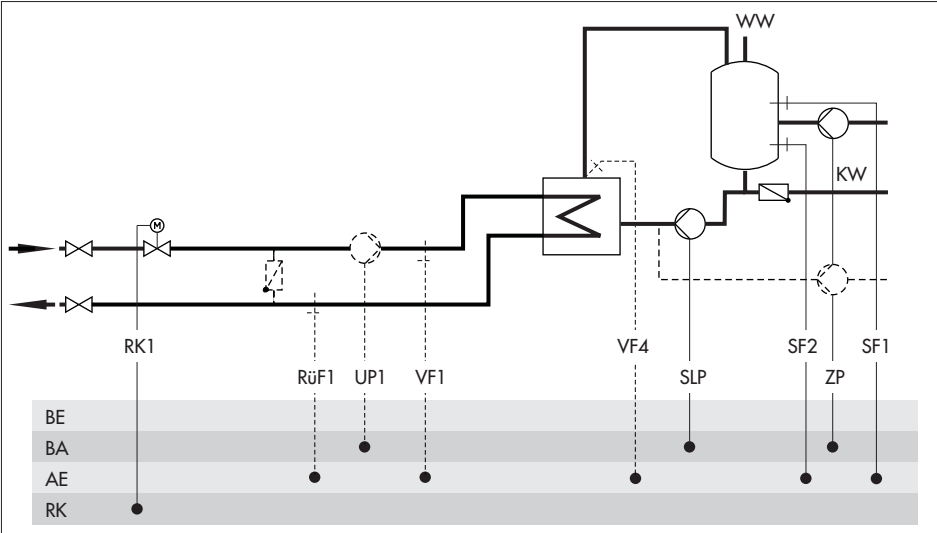
System	Anl 1.6 With pre-control	Anl 1.6 Without pre-control
Integration of VF4, UP1	Possible	Not possible
ZP integration with CO4 -> F10 - 1 (broken line, see cover)	Possible	Possible
Note	–	VF1 takes the position of VF4; RüF1 is to be installed in the heat exchanger
Default setting		
CO1 -> F03	- 1 (with RüF1)	
CO4 -> F01	- 1 (with SF1)	
CO4 -> F02	- 1 (with SF2)	
CO4 -> F05	- 0 (without VF4)	

System Anl 1.9

Default setting	
CO4 -> F01	- 0 (without SF1)
CO4 -> F03	- 0 (without RüF2)
CO4 -> F04	- 0 (without water flow sensor connected to terminals 03/13)

System Anl 2.0
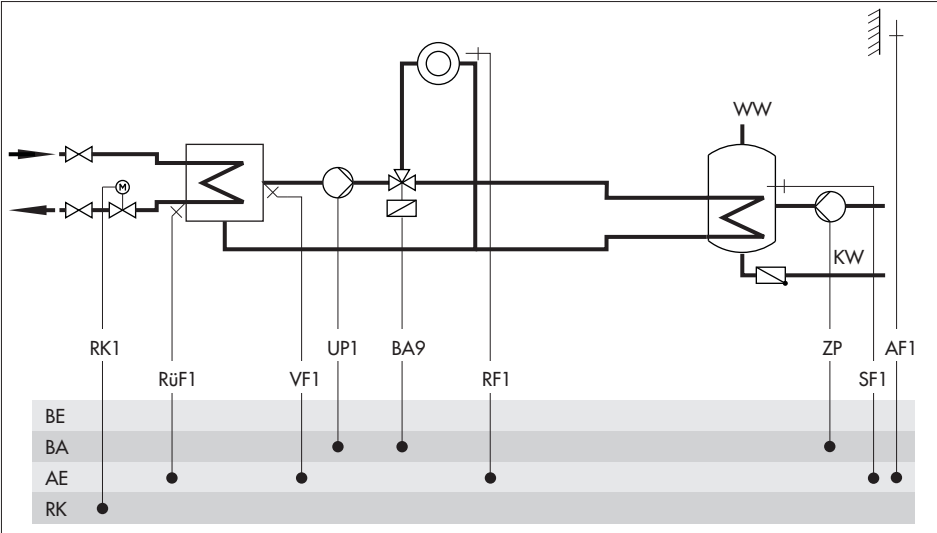
Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO4 -> F01	- 1 (with SF1)
CO4 -> F02	- 0 (without SF2)

Systems Anl 2.1 to 2.3
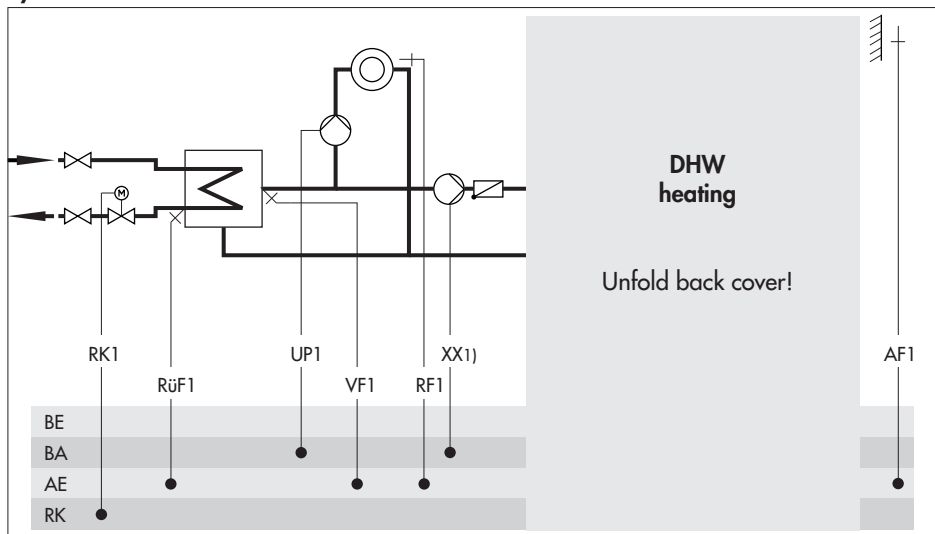
System	Anl 2.1	Anl 2.2	Anl 2.3
Type of DHW heating	Type 1	Type 2	Type 3
[1] XX =	SLP	BA9	SLP
Integration of flow sensor VF4	Not possible	Possible	–
ZP integration with CO4 -> F10 - 1 (broken line, see cover)	–	Not possible	–
Default setting			
CO1 -> F01	- 0 (without RF1)	- 0 (without RF1)	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)	- 1 (with AF1)	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)	- 1 (with RüF1)	- 1 (with RüF1)
CO4 -> F01	- 1 (with SF1)	- 1 (with SF1)	- 1 (with SF1)
CO4 -> F02	- 0 (without SF2)	- 1 (with SF2)	
CO4 -> F05		- 0 (without VF4)	

System Anl 3.0
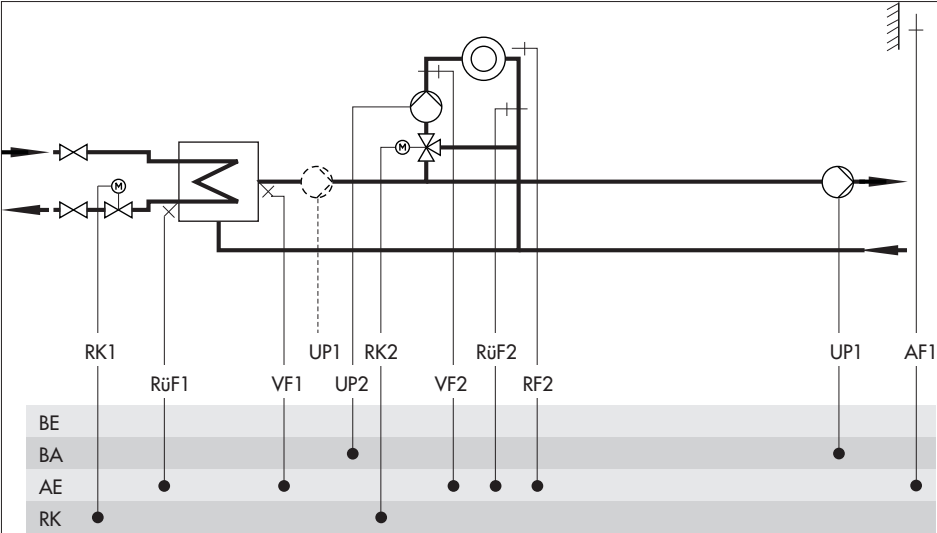
Default setting	
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO2 -> F01	- 0 (without RF2)
CO2 -> F03	- 0 (without RüF2)

System Anl 3.1 (TROVIS 5575-001x version only with Var.-ID1063809 and 1621288)
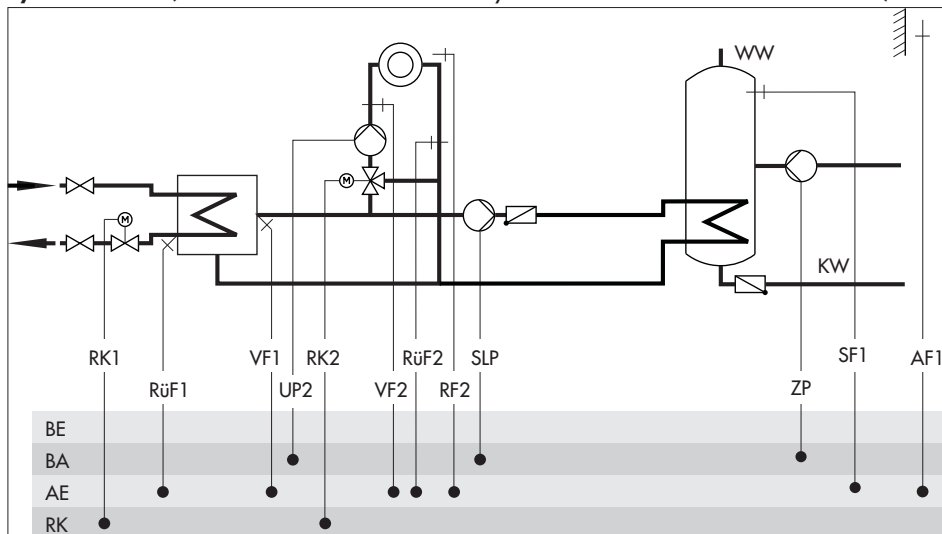
RK1	RüF1	VF1	UP2	RK2	VF2	RüF2	RF2	SLP	ZP	SF1	AF1

Default setting	
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO2 -> F01	- 0 (without RF2)
CO2 -> F03	- 0 (without RüF2)
CO4 -> F01	- 1 (with SF1)
CO4 -> F02	- 0 (without SF2)

System Anl 3.2 (TROVIS 5575-001x version only with Var.-ID1063809 and 1621288)
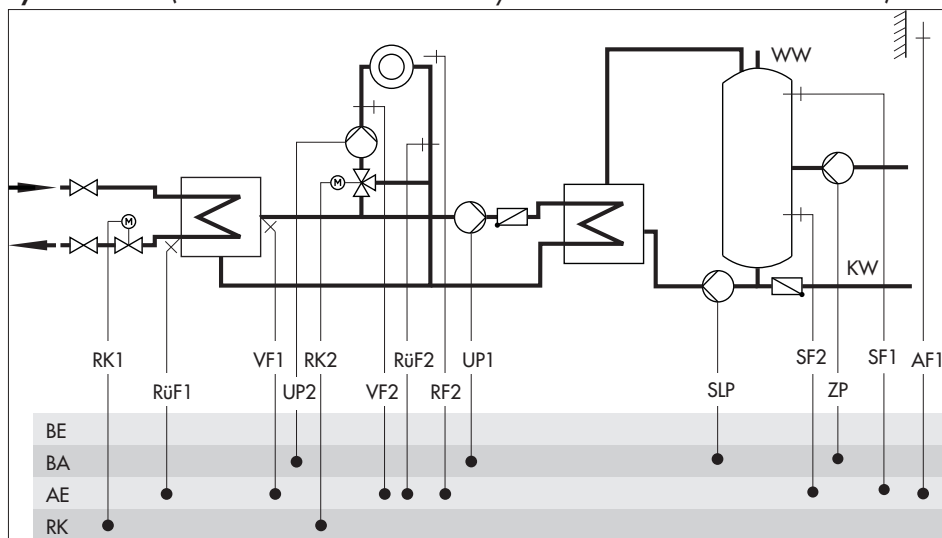
Default setting	
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO2 -> F01	- 0 (without RF2)
CO2 -> F03	- 0 (without RüF2)
CO4 -> F01	- 1 (with SF1)
CO4 -> F02	- 1 (with SF2)

System Anl 3.5
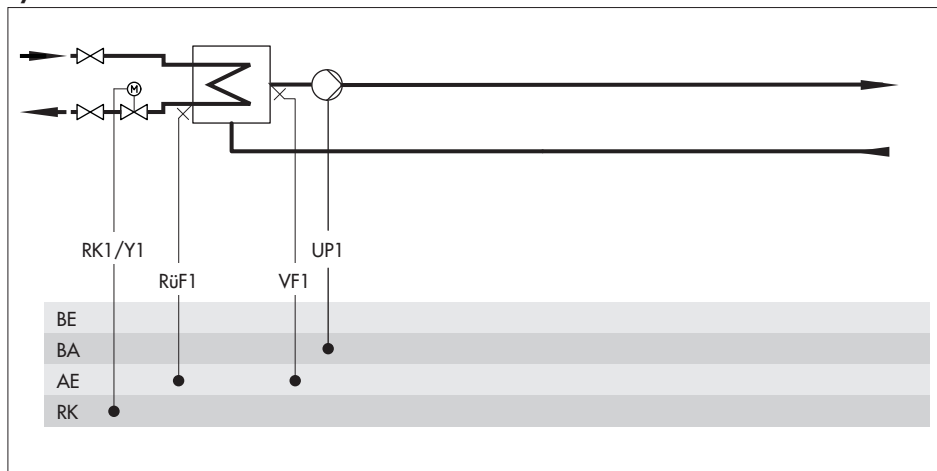
Note	Control and UP1 are only active during the processing of an external demand.
Default setting	
CO1 -> F03	- 1 (with RüF1)

System Anl 4.0
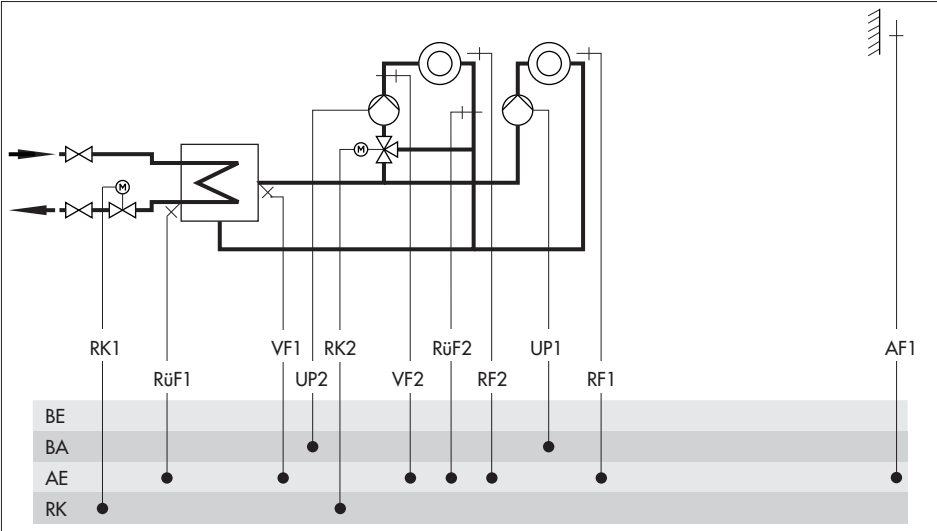
Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO2 -> F01	- 0 (without RF2)
CO2 -> F03	- 0 (without RüF2)

System Anl 4.1

* Note	The circulation pump ZP can only be controlled with the TROVIS 5575-001x version (Var.-ID 1063809 and 1621288).
Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO2 -> F01	- 0 (without RF2)
CO2 -> F03	- 0 (without RüF2)
CO4 -> F01	- 1 (with SF1)
CO4 -> F02	- 0 (without SF2)

System Anl 4.5

* Note	The circulation pump ZP can only be controlled with the TROVIS 5575-001x version (Var.-ID 1063809 and 1621288).
Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO2 -> F01	- 0 (without RF2)
CO2 -> F03	- 0 (without RüF2)
CO4 -> F01	- 1 (with SF1)
CO4 -> F02	- 0 (without SF2)

System Anl 10.0

Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO2 -> F01	- 0 (without RF2)
CO2 -> F03	- 1 (with RüF2)

System Anl 10.1 (all versions of TROVIS 5575-001x with Var.-ID 1063809 and 1621288)
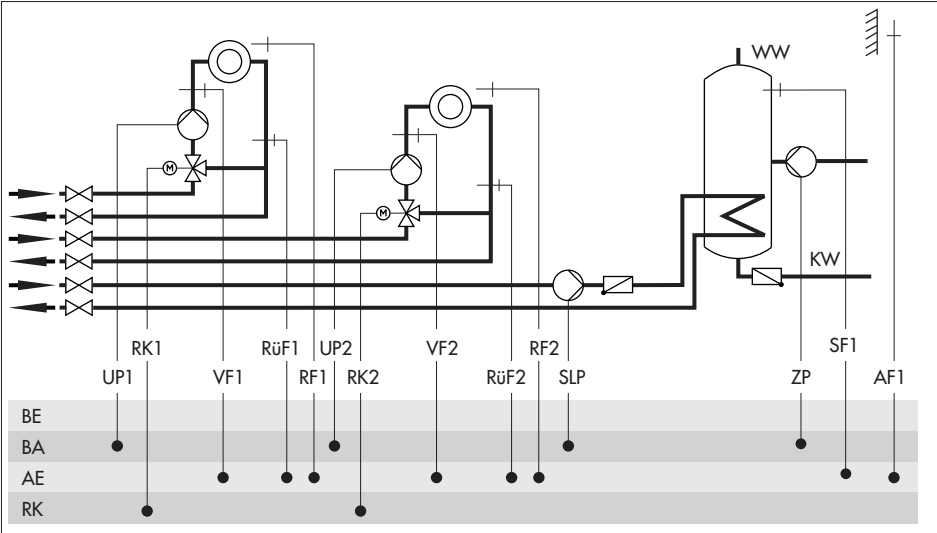
Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO2 -> F01	- 0 (without RF2)
CO2 -> F03	- 1 (with RüF2)
CO4 -> F01	- 1 (with SF1)
CO4 -> F02	- 0 (without SF2)

System Anl 10.5
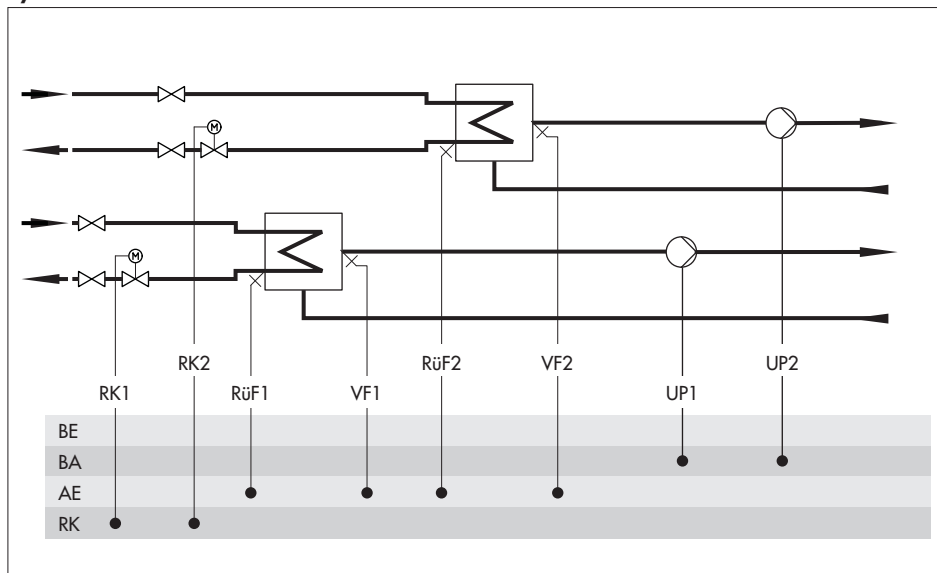
Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F03	- 1 (with RüF1)
CO2 -> F01	- 0 (without RF2)
CO2 -> F03	- 1 (with RüF2)

System Anl 11.0
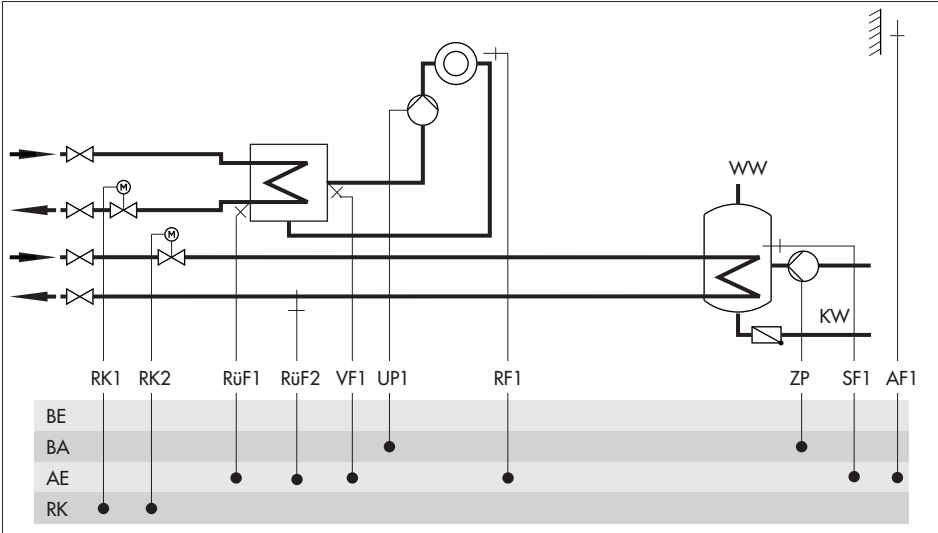
Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO4 -> F03	- 0 (without RüF2)
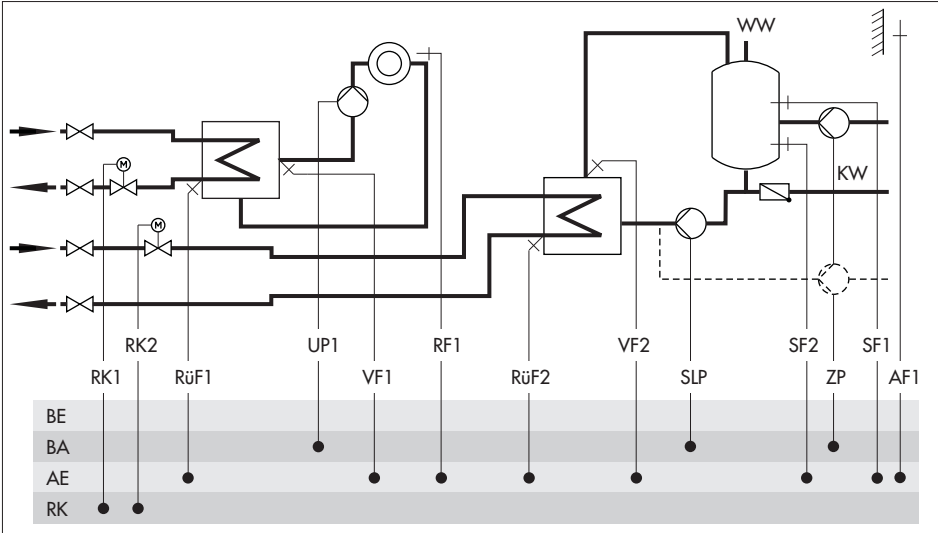
System Anl 11.1

	RK2	RüF2	VF2	UP1	RK1	VF1	RüF1	RF1	SLP		ZP	SF1	AF1
BE													
BA				●					●		●		
AE		●	●			●	●	●				●	●
RK	●				●								

Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO4 -> F01	- 1 (with SF1)
CO4 -> F02	- 0 (without SF2)
CO4 -> F03	- 0 (without RüF2)

The system code number 11.1 can also be used for systems with buffer tank.

System Anl 11.2

Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO4 -> F01	- 1 (with SF1)
CO4 -> F02	- 1 (with SF2)
CO4 -> F03	- 0 (without RüF2)

The system code number 11.2 can also be used for systems with buffer tank. See page 51.

System Anl 11.1/11.2 with buffer tank
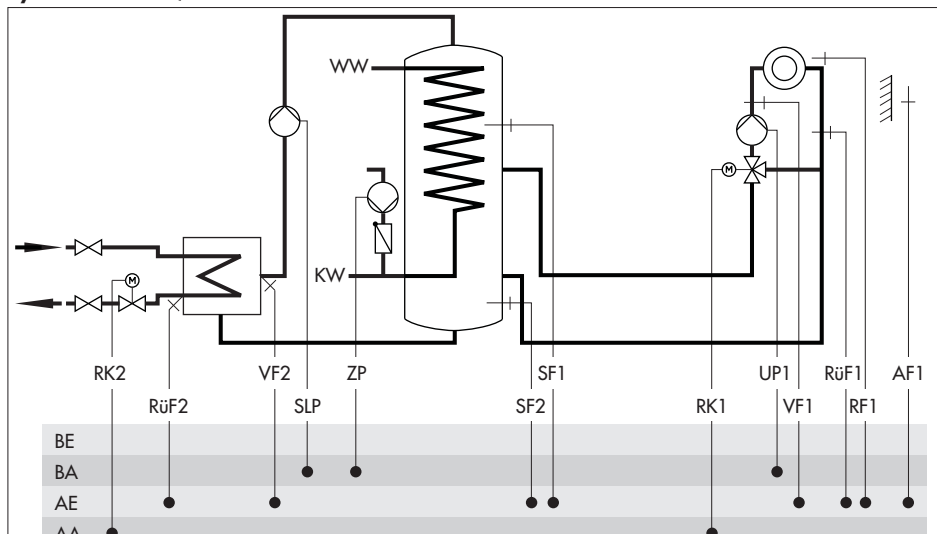
WW
KW

RK2 RüF2 VF2 SLP ZP SF1 SF2 UP1 RüF1 AF1 RK1 VF1 RF1

BE
BA
AE
AA

Default setting			
CO1 -> F01	- 0 (without RF1)		
CO1 -> F02	- 1 (with AF1)		
CO1 -> F03	- 1 (with RüF1)		
CO4 -> F01	- 1 (with SF1)		
CO4 -> F02	Anl 11.1	- 0 (without SF2)	
	Anl 11.2	- 1 (with SF2)	
CO4 -> F03	- 0 (without RüF2)		

System Anl 11.6
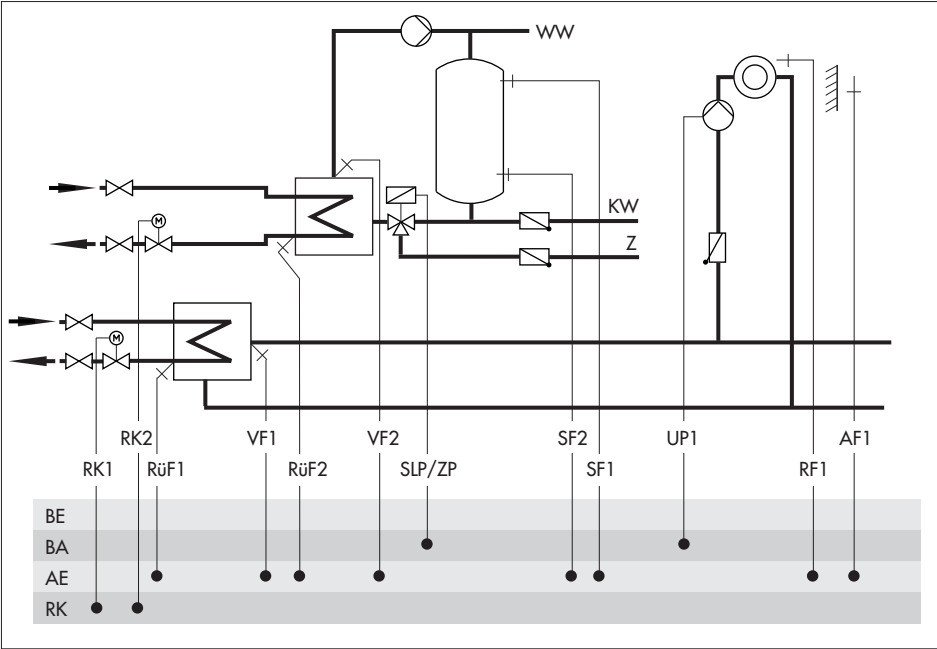
*Note:	The pump in DHW circuit must be implemented for continuous operation and must be directly connected to the mains power supply.
Default settings	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO4 -> F01	- 1 (with SF1)
CO4 -> F02	- 1 (with SF2)
CO4 -> F03	- 0 (without RÜF2)

System Anl 11.9
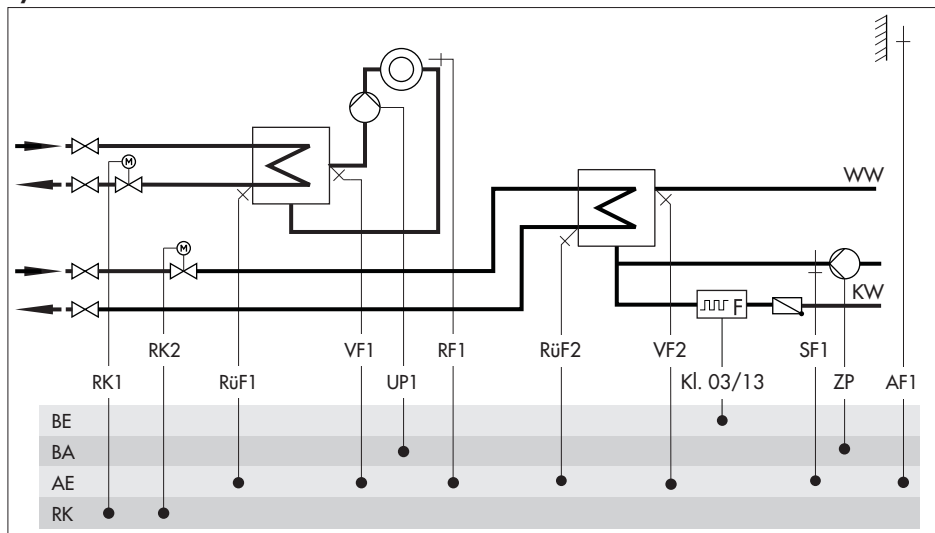
Default setting	
CO1 -> F01	- 0 (without RF1)
CO1 -> F02	- 1 (with AF1)
CO1 -> F03	- 1 (with RüF1)
CO4 -> F01	- 0 (without SF1)
CO4 -> F03	- 0 (without RüF2)
CO4 -> F04	- 0 (without water flow sensor connected to terminals 03/13)

5 Functions of the heating circuit

Which controller functions are available depends on the selected system code number (Anl).

5.1 Weather-compensated control

When weather-compensated control is used, the flow temperature is adjusted depending on the outdoor temperature. The heating characteristic in the controller defines the flow temperature set point as a function of the outdoor temperature (–> Fig. 5). The outdoor temperature required for weather-compensated control can either be measured at an outdoor sensor or received over the 0 to 10 V input or from a connected device bus.
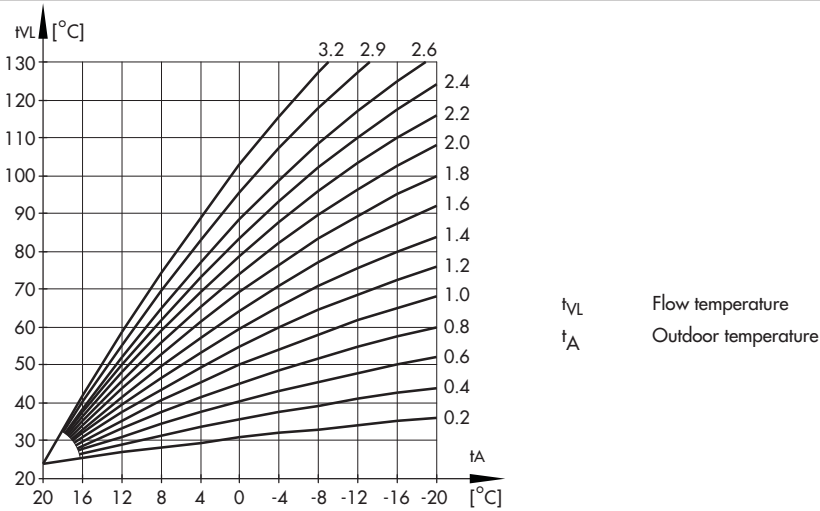
Fig. 5 · Gradient characteristics

Functions	WE	Configuration
Outdoor sensor AF1	1	CO1 -> F02 - 1
Outdoor temperature received over 0 to 10 V input	0	CO5 -> F23 - 1
	−20 °C	Lower transmission range / −30 to 100 °C
	50 °C	Upper transmission range / −30 to 100 °C

» **TROVIS 5575-002x (Var.-ID 1104934 and 1551895):**
Version without device bus: The outdoor temperature can be only be measured directly over the out-door sensor AF.

» **TROVIS 5575-000x (Var.-ID 1058686 and 1621285)**
and TROVIS 5575-001x (Var.-ID 1063809 and 1621288):
The outdoor temperature is alternatively received over the device bus when the following configura-tions are made:
CO7 -> F01- 1 and CO7 -> F07 - 1
An outdoor temperature input independent from AF1 can be sent over the device bus for a second heating circuit following configurations are made:
CO2 -> F02 - 1 and CO7 -> F09 -> 1
A second outdoor sensor cannot be connected.

»

5.1.1 Gradient characteristic

Basically, the following rule applies: a decrease in the outdoor temperature causes the flow temperature to increase in order to keep the the room temperature at a constant temperature.

By varying the parameters *Gradient* and *Level*, you can adapt the characteristic to your indi-vidual requirements:
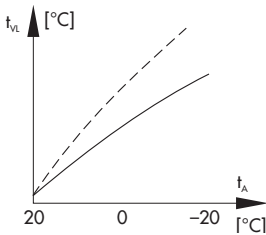
The gradient needs to be increased **if the room temperature drops when it is cold outside**.
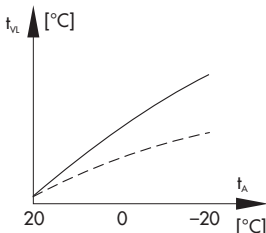
The gradient needs to be decreased **if the room tempera-ture rises when it is cold outside**.
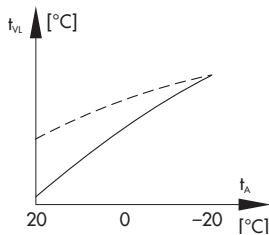
The level needs to be increased and the gradient decreased **if the room temperature drops when it is mild outside**.
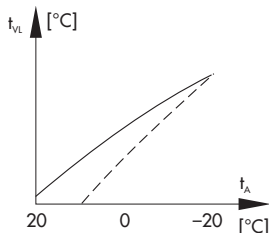
The level needs to be decreased and the gradient increased **if the room temperature rises when it is mild outside**.

Outside the times-of-use, reduced set points are used for control:
The reduced flow set point is calculated as the difference between the adjusted values for *Day set point* (rated room temperature) and *Night set point (reduced room temperature).*
The parameters *Max. flow temperature* and *Min. flow temperature* mark the upper and lower limits of the flow temperature. A separate gradient characteristic can be selected for the limitation of the return flow temperature.

Examples for adjusting the characteristic:

▸ Old building, radiator design 90/70:   Gradient approx. 1.8
▸ New building, radiator design 70/55:   Gradient approx. 1.4
▸ New building, radiator design 55/45:   Gradient approx. 1.0
▸ Underfloor heating depending on arrangement: Gradient smaller 0.5

Note: Particularly for control operation without room sensor, the adjusted room temperatures for day (Day set point) and night (Night set point) only become effective satisfactorily when the heating characteristic has been adapted to the building/heating surface layout.

Functions	WE	Configuration
Four-point characteristic	0	CO1, 2 -> F11 - 0

Parameters	WE	Rotary switch / Range of values
Day set point	20 °C	Top, middle / 0 to 40 °C
Night set point	15 °C	Top, middle / 0 to 40 °C

Parameters	WE	Parameter level / Range of values
Gradient, flow	1.8*	PA1, 2 / 0.2 to 3.2
Level, flow	0 °C	PA1, 2 / −30 to 30 °C
Min. flow temperature	20 °C	PA1, 2 / 5 to 130 °C
Max. flow temperature	90 °C*	PA1, 2 / 5 to 130 °C

* With CO1, 2 -> F05 - 1, the following applies: Gradient, flow / 0.2 to 1.0 (1.0)
Max. flow temperature / 5 to 50 °C (50 °C)

5.1.2 Four-point characteristic

The four-point characteristic allows you to define your own heating characteristic.
It is defined by 4 points each for the *Outdoor temperature*, the *Flow temperature,* the *Reduced flow temperature* and the *Return flow temperature*. The parameters *Max. flow temperature* and *Min. flow temperature* mark the upper and lower limits of the flow temperature.

P1 to P4	Points 1 to 4
t_{VL}	Flow temperature
t_A	Outdoor temperature
... min	Min. t_{VL}
...max	Max. t_{VL}
——	Four-point characteristic
- - - -	Reduced four-point characteristic
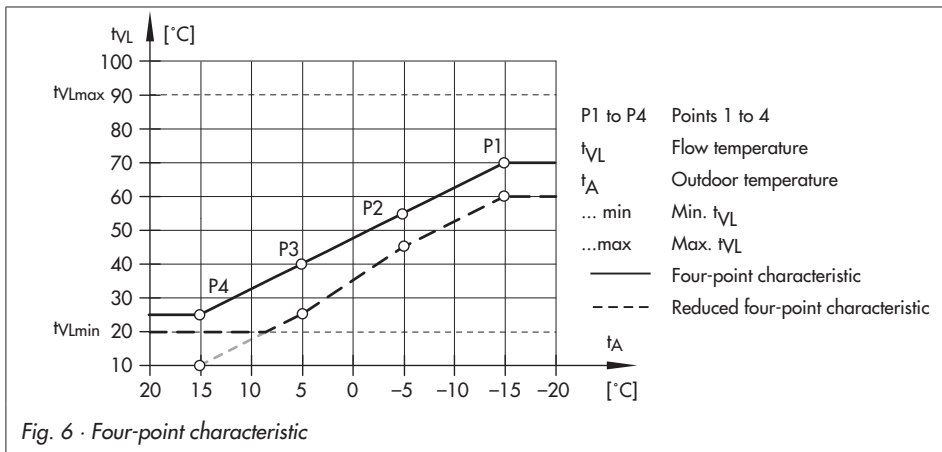
Fig. 6 · Four-point characteristic

Note: The parameters Day set point *and* Night set points *are no longer available when the four-point characteristic has been selected, provided no additional functions (e.g.* **Optimization**, **Flash adaptation**) *have been selected.*

Functions		WE	Configuration
Four-point characteristic		0	CO1, 2 -> F11 - 1
Parameters		**WE**	**Parameter level / Range of values**
Outdoor temperature	Point 1	−15 °C	PA1, 2 / −40 to 50 °C
	Point 2	−5 °C	
	Point 3	5 °C	
	Point 4	15 °C	
Flow temperature	Point 1	70 °C	PA1, 2 / 5 to 130 °C
	Point 2	55 °C	
	Point 3	40 °C	
	Point 4	25 °C	
Reduced flow temperature	Point 1	60 °C	PA1, 2 / 5 to 130 °C
	Point 2	40 °C	
	Point 3	20 °C	
	Point 4	20 °C	
Return flow temperature	Point 1 to 4	65 °C	PA1, 2 / 5 to 90 °C
Min. flow temperature		20 °C	PA1, 2 / 5 to 130 °C
Max. flow temperature		90 °C*	PA1, 2 / 5 to 130 °C
* *With CO1, 2 -> F05 - 1, the following applies: Max. flow temperature / 5 to 50 °C (50 °C)			

Note: The **Four-point characteristic** *function can only be activated when the* **Adaptation** *function is not active (CO1, 2 -> F08 - 0).*

5.2   Fixed set point control

During the times-of-use, the flow temperature can be controlled according to a fixed set point. Outside the times of use, the controller adjusts the reduced flow temperature.
Set the required rated flow temperature as *Day set point*, and the reduced flow temperature as *Night set point*.

Functions	WE	Configuration
Outdoor sensor AF1	1	CO1 -> F02 - 0
Parameter	**WE**	**Rotary switch / Range of values**
Day set point	50 °C	Top, middle / Min. to max. flow temperature
Night set point	30 °C	Top, middle / Min. to max. flow temperature

Parameters	WE	Parameter level / Range of values
Min. flow temperature	20 °C	PA1, 2 / 5 to 130 °C
Max. flow temperature	90 °C	PA1, 2 / 5 to 130 °C

*Note: A fixed set point control in heating circuit 2 with CO2 -> F02 - 0 can only be config-
ured if CO1 -> F02 - 0 is set as well, because the heating circuit 2 with CO2 -> F02 - 0 only
uses the measured outdoor temperature provided by heating circuit 1.*

5.3 Underfloor heating/drying of jointless floors

Using function block setting CO1, 2 -> F05 - 1, the respective heating circuit is configured as
an underfloor heating circuit. In doing so, the controller at first only limits the range of values
of the heating characteristic gradient and the maximum flow temperature in parameter lev-
els PA1, 2:

▸ Range of values of the gradient: 0.2 to1.0
▸ Range of values of the maximum flow temperature: 5 to 50 °C

In addition, it is possible to activate the **Drying of jointless floors** function. In connection with
this, the function block parameters are listed which appear after activating this function
block. They determine the drying process: the first heating up phase starts at the entered *Start
temperature*, which has a flow temperature of 25 °C in its default setting. In the course of 24
hours, this temperature is raised by the value entered in *Temperature rise*, i.e. the default set-
ting causes the flow temperature set point to rise to 30 °C. If the *Maximum temperature* is
reached, it is kept constant for the number of days entered in *Maintaining time for maximum
temperature*. The *Temperature reduction* determines the temperature reduction downwards. If
the *Temperature reduction* is set to 0, the temperature maintaining phase moves directly to
automatic mode. The drying of jointless floor runs to comply with DIN EN 1264 Part 4 when
Start temperature is set to 25 °C and *Temperature rise per day* to 0.0 °C. As a result, the
function starts with a flow temperature of 25 °C regulated to be kept constant for three days.
Following this, the temperature is increased to the maximum adjusted temperature. The fur-
ther process continues as described.

The drying function is activated by changing the setting *STOP* to *START temperature build-up
phase* (■ *START* on the display). The restarting stages *START temperature maintaining phase*
(■■ *START* on the display) and *START temperature reduction phase* (■■■ *START* on the dis-
play) can be selected to continue an interrupted drying process.

The course of the drying process can be monitored in the information level over the icon of flow temperature display ($^\cdot$ⅲ) of the associated heating circuit:

| 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 |
| ■ |
| START |

Temperature build-up phase

| 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 |
| ■■ |
| START |

Temperature maintaining phase

| 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 |
| ■■■ |
| START |
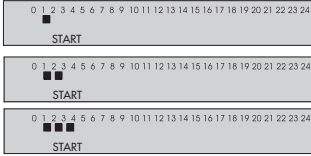
Temperature reduction phase

The drying process has been successfully completed when the additional icon in the flow temperature display goes out after the last phase.

STOP on the display indicates that there has been a deviation of flow temperature of more than 5 °C for longer than 30 minutes. The function is canceled by the controller in such cases. While *STOP* appears on the display, the controller keeps the flow temperature constant at 25 °C.

A power failure while the drying function is active or when *STOP* appears on the display automatically leads to the drying function restarting from the beginning.

In systems in which the drying function had to be interrupted due to DHW heating (e.g. Anl 2.1), storage tank charging does not take place while the drying function is active, provided it is not used for frost protection of the storage tank.

Note: *The function block parameter can only be accessed when the function has started by deactivating the function block and activating it again.*

Functions	WE	Configuration
Underfloor heating	0	CO1, 2 -> F05 - 1
Drying of jointless floors	25 °C	Start temperature / 20 to 60 °C
	5 °C/24 h	Temperature rise / 0 to 10 °C/24 h
	45 °C	Maximum temperature / 25 to 60 °C
	4	Maintaining time for max. temperature / 1 to 10 days
	0 °C/24 h	Temperature reduction / 0 to 10 °C/24 h
	STOP	■ START, ■■ START, ■■■ START

5.4 Deactivation depending on outdoor temperature

5.4.1 OT deactivation value in rated operation

If the outdoor temperature exceeds the limit entered in *OT deactivation value in rated operation*, the heating circuit concerned is put out of service immediately. The valve is closed and the

pump is switched off after t = 2 x valve transit time. Heating operation is restarted immediately when the outdoor temperature falls below this value (less 0.5 °C hysteresis).

With the default settings, this means that, during the warm season, the system is switched off at an outdoor temperature of 22 °C.

Parameter	WE	Parameter level / Range of values
OT deactivation value in rated operation	22 °C	PA1, 2 / 0 to 50 °C

5.4.2 OT deactivation value in reduced operation

If the outdoor temperature exceeds the limit value *OT deactivation value in reduced operation*, the heating circuit concerned is put out of service immediately. The valve is closed and the pump is switched off after t = 2 x valve transit time. Heating operation is restarted immediately when the outdoor temperature falls below this value (less 0.5 °C hysteresis).

With the default settings, this means that, at night, the system is switched off at an outdoor temperature of 15 °C to save energy. Nevertheless, remember that the system requires some time in the morning to heat up the building.

Parameter	WE	Parameter level / Range of values
OT deactivation value in reduced operation	15 °C	PA1, 2 / −20 to 50 °C

5.4.3 OT activation value in rated operation

If a heating circuit is in reduced operation (automatic operating mode), the circuit is automatically transferred to rated operation when the outdoor temperature falls below the limit value *OT activation value in rated operation*. When the limit value is exceeded (plus 0.5 °C hysteresis), reduced operation is restarted.

This function is activated at very low temperatures to avoid that the building cools down excessively outside the times-of-use when low outdoor temperatures occur.

Parameter	WE	Parameter level / Range of values
OT activation value in rated operation	−15 °C	PA1, 2 / −20 to 5 °C

5.4.4 Summer mode

Summer mode is activated depending on the mean daytime temperature (measured between 7.00h and 22.00h) during the required period.

If the mean daytime temperature exceeds the *OT limit value in summer mode* on n successive

days, summer mode is activated on the following day. This means that the valves in all heating circuits are closed and the circulation pumps are switched off after t = 2 x valve transit time. If the mean daytime temperature remains below the *OT limit value in summer mode* on m successive days, summer mode is deactivated on the following day.

Functions	WE	Configuration
Summer mode	0	CO5 -> F04 - 1
	01.06	Start summer mode/ 01.01 (1 Jan) to 31.12 (31 Dec)
	2	No. of days until activation / 1 to 3
	30.09	Stop summer mode / 01.01 to 31.12
	1	No. of days until deactivation / 1 to 3
	18 °C	OT limit value in summer mode /0 to 30 °C

Note: Summer mode only becomes effective when the controller is in automatic mode (   ).

5.5 Delayed outdoor temperature adaptation

The calculated outdoor temperature is used to determine the flow temperature set point. The heat response is delayed when the outdoor temperature either decreases, increases or increases and decreases. If the outdoor temperature varies by, for example, 12 °C within a very short period of time, the calculated outdoor temperature is adapted to the actual outdoor temperature in small steps. Assuming a *Delay* of 3 °C/h, the adaptation would take $t = \frac{12°C}{3°C/h} = 4h$.

Note: The delayed outdoor temperature adaptation helps avoid unnecessary overloads of central heating stations in combination with either overheated buildings occurring, for example, due to warm winds, or temporarily insufficient heating due to the outdoor sensor being exposed to direct sunshine.
In operating level, the outdoor temperature blinks on the display while delayed outdoor temperature adaptation is active. The calculated outdoor temperature is displayed.

Functions	WE	Configuration
Delayed OT adaptation when OT decreases	0	CO5 -> F05 - 1
Delayed OT adaptation when OT increases	0	CO5 -> F06 - 1
	3 °C/h	Delay / 1 to 6 °C/h

5.6 Remote operation

Apart from measuring the room temperature, the Type 5244 Room Panel (PTC room sensor) and Type 5257-5 Room Panel (Pt 1000 sensor) provide the following opportunities of influencing the control process:

▶ Selection of the operating mode: – Automatic mode
  – Day mode
  – Night mode

▶ Set point correction: during rated operation, the room temperature set point can be increased or reduced by up to 5 °C using a continuously adjustable rotary knob.

When the room sensor is activated and the remote operation (room panel) is connected and activated, the measured room temperature is displayed. Nevertheless, it is not used for control unless the **Optimization**, **Adaptation** or **Flash adaptation** functions have been activated.

Function	WE	Configuration
Rooms sensors RF1/2	0	CO1, 2 -> F01 - 1

» **TROVIS 5575-000x (Var.-ID 158686 and 1621285) and
TROVIS 5575-001x (Var.-ID 1063809 and 1621288):**
Alternatively, the TROVIS 5570 Room Panel can be connected when the following configurations are made:
CO7 -> F01 -1 and CO7 -> F03 - 1 and CO7 -> F04 - 1 (see section 7.11.5)
The *Day set point* set by the rotary switch remains unaffected by set point corrections performed at the room panel. Only the calculated flow temperature set point or the room temperature set point (for flash adaptation and adaptation) are changed accordingly.
The evaluation of a room temperature sensor connected to the terminals RF is not possible for this control circuit when a TROVIS 5570 Room Panel is configured.

» **TROVIS 5575-002x (Var.-ID 1104934 and 1551895):**
Version without device bus: The TROVIS 5570 Room Panel cannot be connected.

Type 5244/5257-5	TROVIS 5575	
	Rk1	Rk2
Terminal 1	Terminal 5	Terminal 3
Terminal 2	Terminal 12	Terminal 12
Terminal 3	Terminal 9	Terminal 10

*Fig. 7 · Wiring plan for Type 5244/5257-5 Room Panels to TROVIS 5575 for Rk1 **or** Rk2*

5.7 Optimization

This function requires the use of a room sensor. Depending on the building characteristics, the controller determines and adapts the required preheating time (maximum 8 hours) to ensure that the required *Day set point* (rated room temperature) has been reached in the reference room when the time-of-use starts. During the preheating period, the controller heats with the max. flow temperature. This temperature is built up in steps of 10 °C. As soon as the *Day set point* has been reached, weather-compensated control is activated.

Depending on the room sensors, the controller switches off the heating system up to one hour before the time-of-use ends. The controller chooses the deactivation time such that the room temperature does not drop significantly below the required value until the time-of-use ends. During the preheating period and the premature deactivation of the heating system, the icons ☼ or ☽ blink on the display. Outside the times-of-use, the controller monitors the *Night set point* (reduced room temperature). When the temperature falls below the night set point, the controller heats with the max. flow temperature until the measured room temperature exceeds the adjusted value by 1 °C.

Note: Direct sunshine can cause the room temperature to increase and thus result in the premature deactivation of the heating system.
When the room temperature decreases while the heating system is temporarily outside its times-of-use, this can prematurely cause the controller to heat up to the adjusted Day set point.

Functions	WE	Configuration
Room sensors RF1/2	0	CO1, 2 -> F01 - 1
Outdoor sensors AF1	1	CO1 -> F02 - 1
Optimization	0	CO1, 2 -> F07 - 1
Parameters	**WE**	**Rotary switch / Range of values**
Day set point	20 °C	Top, middle / 0 to 40 °C
Night set point	15 °C	Top, middle / 0 to 40 °C

5.8 Flash adaptation

To ensure that the controller reacts immediately to room temperature deviations during rated or reduced operation, the function block setting CO1, 2 -> F09 - 1 needs to be made.
The heating is then always switched off as soon as the room temperature exceeds the *Day set point* or *Night set point* by 2 °C.

Heating first starts again when the room has cooled off and the room temperature is 1 °C above the *Set point*. The flow temperature set point is corrected if the *Cycle time* and *Gain K_p* are set to a value other than 0. The *Cycle time* determines the intervals at which the flow temperature set point is corrected by 1 °C. A *Gain K_p* set to a value other than 0 causes a direct increase/decrease in flow temperature set point when a sudden deviation in room temperature arises. A *Gain K_p* setting of 10.0 is recommended.

Note: Cooling loads, such as drafts or open windows, affect the control process! Rooms may be temporarily overheated after the cooling load has been eliminated!

Functions	WE	Configuration
Room sensors RF1/2	0	CO1, 2 -> F01 - 1
Flash adaptation	0	CO1, 2 -> F09 - 1
	20 min	Cycle time / 0 to 100 min
	0	K_p (gain) / 0 to 25
Parameters	**WE**	**Rotary switch / Range of values**
Day set point	20 °C	Top, middle / 0 to 40 °C
Night set point	15 °C	Top, middle / 0 to 40 °C

5.8.1 Flash adaptation without outdoor sensor (room temperature dependent)

The flow temperature control starts with *Flow day set point* in rated operation or with *Flow night set point* in reduced operation as no set points calculated using characteristics exist without an outdoor sensor. The *Cycle time* determines the intervals at which the flow temperature set point is corrected by 1 °C. The heating is then always switched off as soon as the room temperature exceeds the *Day set point* or *Night set point* by 2 °C. Heating first starts again when the room has cooled off and the room temperature is 1 °C above the *Set point*. A *Gain K_p* set to a value other than 0 causes a direct increase/decrease in flow temperature set point when a sudden deviation in room temperature arises. A *Gain K_p* setting of 10.0 is recommended.

Functions	WE	Configuration
Room sensors RF1/2	0	CO1, 2 -> F01 - 1
Outdoor sensor AF1/2	1	CO1, 2 -> F02 - 0

Functions	WE	Configuration
Flash adaptation	0	CO1, 2 -> F09 - 1
	20 min	Cycle time / 1 to 100 min
	0	K_p (gain) / 0 to 25

Parameters	WE	Rotary switch / Range of values
Day set point	20 °C	Top, middle, bottom / 0 to 40 °C
Night set point	15 °C	Top, middle, bottom / 0 to 40 °C

Parameters	WE	Parameter level / Range of values
Flow day set point	50 °C	PA1, 2 / 5 to 130 °C
Flow night set point	30 °C	PA1, 2 / 5 to 130 °C

5.9   Adaptation

The controller is capable of automatically adapting the heating characteristic to the building characteristics, provided a gradient characteristic has been set (CO1, 2 -> F11 - 0). The reference room, where the room sensor is located, represents the entire building and is monitored to ensure that the room set point (*Day set point)* is maintained. When to mean measured room temperature in rated operation deviates from the adjusted set point, the heating characteristic is modified accordingly for the following time-of-use. The corrected value is displayed in parameter levels PA1, 2 under *Gradient, flow.*

Functions	WE	Configuration
Room sensors RF1/2	0	CO1, 2 -> F01 - 1
Outdoor sensors AF1/2	1	CO1, 2 -> F02 - 1
Adaptation	0	CO1, 2 -> F08 - 1
Four-point characteristic	0	CO1, 2 -> F11 - 0

Parameters	WE	Rotary switch / Range of values
Day set point	20 °C	Top, middle / 0 to 40 °C
Night set point	15 °C	Top, middle / 0 to 40 °C

*Note: If the **Flash adaptation** function is already configured with a small cycle time, the **Adaptation** function should not be configured as well.*

5.10 Cooling control

Cooling control with outdoor sensor

When the cooling control function is activated in a control circuit, the four-point characteristic of the corresponding control circuit is automatically activated and the operating direction of the control output is reversed. In PA1 and/or PA2 the four points for the course of the set point based on the outdoor temperatures can be adjusted separately for day and night mode. The *Base point for return flow temperature* that can be adjusted with an active return flow sensor determines the point at which a minimum limitation of the return flow temperature starts: If the measured return flow temperature falls below this value, the flow temperature set point is raised. The four return flow temperature values in the four-point characteristic function have no effect.

Functions		WE	Configuration
Cooling control		0	CO1, 2 -> F04 - 1
Four-point characteristic		0	CO1, 2 -> F11 - 1
Parameters		WE	Parameter level / Range of values
Outdoor temperature	Point 1	−15 °C	PA1, 2 / −40 to 50 °C
	Point 2	−5 °C	
	Point 3	5 °C	
	Point 4	15 °C	
Flow temperature	Point 1	70 °C	PA1, 2 / 5 to 130 °C
	Point 2	55 °C	
	Point 3	40 °C	
	Point 4	25 °C	
Reduced flow temperature	Point 1	60 °C	PA1, 2 / 5 to 130 °C
	Point 2	40 °C	
	Point 3	20 °C	
	Point 4	20 °C	
Base point of return flow temperature		65 °C	PA1, 2 / 5 to 90 °C

Note: The limiting factors of the **Return flow sensor RüF1/RüF2** *(CO1, 2 -> F03) functions apply during cooling control as well.*

Cooling control without outdoor sensor

When the cooling control function is activated in a control circuit without outdoor sensor, only the adjustment limits for day and night set points can be adjusted at the rotary switch as well as the *Base point for return flow temperature* in PA1 and/or PA2.

Functions	WE	Configuration
Outdoor sensor		CO1 -> F01 - 0
Cooling control	0	CO1, 2 -> F04 - 1
Parameters	**WE**	**Rotary switch / Range of values**
Day set point	20 °C	Top, middle / 0 to 40 °C
Night set point	15 °C	Top, middle / 0 to 40 °C
Parameters	**WE**	**Parameter level / Range of values**
Min. flow temperature	20 °C	PA1, 2 / 5 to 130 °C
Max. flow temperature	90 °C	PA1, 2 / 5 to 130 °C
Base point of return flow temperature	65 °C	PA1, 2 / 5 to 90 °C

Note: The limiting factors of the **Return flow sensor RüF1/RüF2** (CO1, 2 -> F03) functions apply during cooling control as well.

6 Functions of the DHW circuit

6.1 DHW heating in the storage tank system

Start storage tank charging

SLP	Storage tank charging pump
SF1	Storage sensor 1
ZP	Circulation pump
WW	Hot water
KW	Cold water
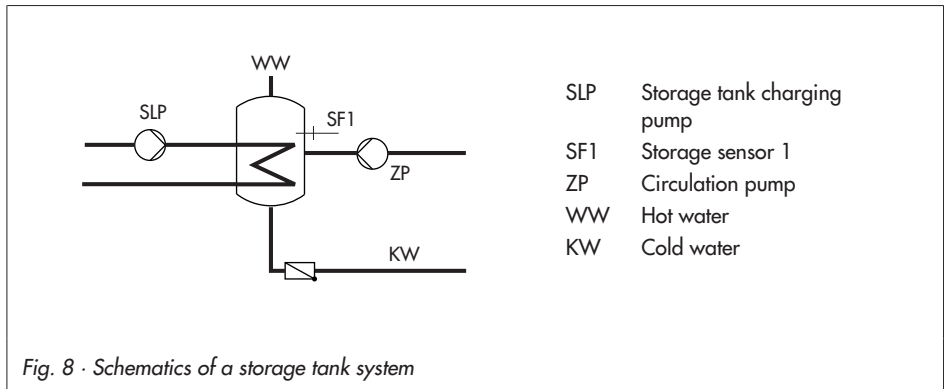
Fig. 8 · Schematics of a storage tank system

The controller begins charging the storage tank when the water temperature measured at sensor SF1 falls below the *DHW temperature set point* by 0.1 °C. If the flow temperature in the system exceeds the required charging temperature, the controller tries to reduce the flow temperature in the heating circuit for up to 3 minutes before the storage tank charging pump is activated. When there is no heating operation or when the flow temperature in the system is lower, the storage tank charging pump is switched on immediately.

If the function CO4 -> F15 - 1 (**SLP ON depending on return flow temperature**) is activated, the primary valve is opened without simultaneously operating the storage tank charging pump. The storage tank charging pump is not switched on before the primary return flow temperature has reached the temperature currently measured at storage sensor SF1.

This function enables storage tank charging when the heating system is switched off, e.g. in summer mode, without cooling down the storage tank first by filling it with cold flow water. The storage tank charging pump does not start operation before a sufficiently high temperature has been reached at the heat exchanger.

Note: Instead of the parameter DHW temperature*, the* Charging temperature *can be set as the absolute value at the rotary switch if a storage tank thermostat is used.*

Time-controlled switchover of storage tank sensors

By configuring a second storage tank sensor SF2 over the function block CO4 -> F19 -1, it is possible to determine that the storage tank sensor SF1 is used for day mode in the DHW circuit and that the storage tank sensor SF2 is used for night mode. As a result, different storage tank volumes can be kept at a constant temperature according to a time schedule, and also at different temperatures if the *DHW set point* and *Sustained DHW temperature* differ from one another.

Stop storage tank charging

The controller stops charging the storage tank when the water temperature measured at sensor SF1 has reached the temperature T = *DHW temperature + hysteresis*. When there is no heating operation or when the flow temperature demand in the system is lower, the corresponding valve is closed.
The storage tank charging pump is switched off after t = *lag time of storage tank charging pump* x *valve transit time*.

With the default settings, the temperature in the storage tank is increased by 5 °C to reach 60 °C when the storage tank temperature falls below 55 °C. The charging temperature is calculated from the DHW temperature (55 °C) plus the charging temperature boost (10 °C), which equals 65 °C. When the storage tank has been charged, the heating valve is closed and the charging pump continues operation for the time t (lag). Outside the times-of-use, the storage tank is only charged when the temperature falls below 40 °C (*Sustained DHW temperature*). In this case, the tank is charged with a charging temperature of 50 °C until 45 °C is reached in the tank.

Functions	WE	Configuration
Storage sensor SF1	1	CO4 -> F01 - 1
Storage sensor SF2		CO4 -> F02 (- 1 when CO4 -> F19 - 1)
SLP ON depending on return flow temperature	0	CO4 -> F15
Time-controlled switchover of storage sensors	0	CO4 -> F19 (- 1 only when CO4 -> F02 - 1)
Parameter	**WE**	**Rotary switch / Range of values**
DHW temperature set point or charging temperature set point with CO4 -> F01 - 0	55 °C	Bottom / Min. to max. DHW temperature
Parameters	**WE**	**Parameter level / Range of values**
Min. DHW temperature*	40 °C	PA4 / 5 to 90 °C
Max. DHW temperature*	60 °C	PA4 / 5 to 90 °C
Hysteresis**	5 °C	PA4 / 0 to 30 °C
Charging temperature boost***	10 °C	PA4 / 0 to 50 °C

Parameters	WE	Parameter level / Range of values
Lag of storage tank charging pump	0.5	PA4 / 0 to 10.0
Sustained DHW temperature	40 °C	PA4 / 5 to 90 °C

*   Parameters serve as limitation of the adjustment range for the DHW temperature to be set
      at the rotary switch

**   Deactivation value T = *DHW temperature + hysteresis*

*** Charging temperature T = *DHW temperature + charging temperature boost*

6.1.1 DHW circuit additionally controlled by a globe valve

In system Anl 11.1, the following version with globe valve can be configured instead of the
three-way valve control in the DHW circuit:

Rk2/Y2	Control circuit/valve 2
SLP	Storage tank charging pump
SF1	Storage sensor 1
VF2	Flow sensor 2
ZP	Circulation pump
WW	Hot water
KW	Cold water

Fig. 9 · Schematics of a storage tank system with a globe valve for return flow temperature limitation
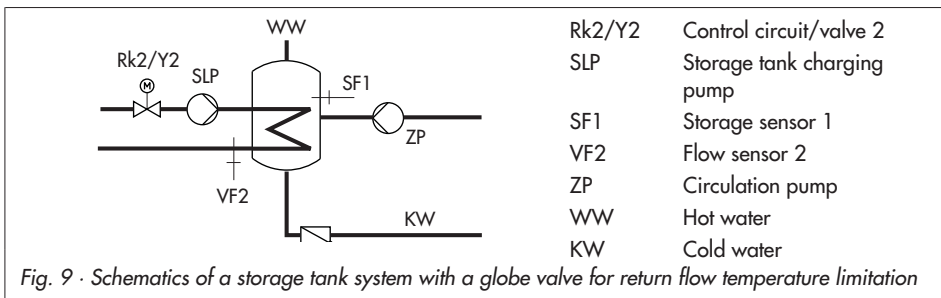
Globe valve and temperature sensor VF2 are used exclusively for return flow temperature
limitation in the schematics shown above. The pre-control circuit provides at least the same
flow temperature as in the standard schematic version which is calculated from *DHW tem-
perature set point + Charging temperature boost + Primary exchanger control boost set
point.*

The functions and parameters of the DHW heating in the storage tank system are upgraded
by the following settings:

Function	WE	Configuration
DHW circuit additionally controlled by a globe valve	0	CO4 -> F20 - 1

Parameter	WE	Parameter level / Range of values
Maximum return flow temperature	65 °C	PA4 / 20 to 90 °C

6.2 DHW heating in the storage tank charging system

Start storage tank charging
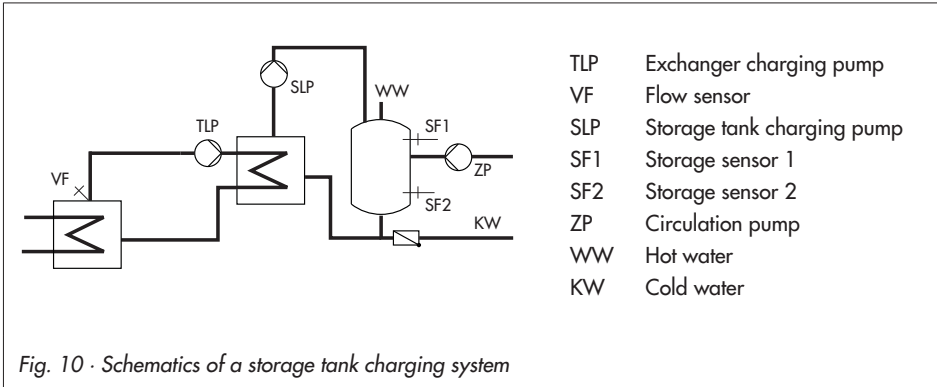
TLP	Exchanger charging pump
VF	Flow sensor
SLP	Storage tank charging pump
SF1	Storage sensor 1
SF2	Storage sensor 2
ZP	Circulation pump
WW	Hot water
KW	Cold water

Fig. 10 · Schematics of a storage tank charging system

The controller begins charging the storage tank when the water temperature measured at sensor SF1 falls below the *DHW temperature set point* by 0.1 °C. If the flow temperature in the system exceeds the required charging temperature, the controller tries to reduce the flow temperature in the heating circuit for up to 3 minutes before the exchanger charging pump is activated together with the storage tank charging pump.
When there is no heating operation or when the flow temperature in the system is lower, the exchanger charging pump is switched on immediately. If the temperature currently measured at sensor SF1 is reached at sensor VF, the storage tank charging pump is switched on after three minutes at the latest.
If a storage tank thermostat is used, the storage tank charging pump is switched on when the temperature T = *charging temperature* – 5 °C is reached at sensor VF.

Note: *Instead of the* DHW temperature *parameter, the* Charging temperature *can be adjusted as absolute value at the rotary switch if a storage tank thermostat is used.*

When the flow sensor VF4 is activated, the set point in the heat exchanger circuit is influenced by the system deviation in the storage tank charging circuit upon activation of the storage tank charging pump: if the temperature measured at flow sensor VF4 is lower than the required charging temperature, the set point in the heat exchanger circuit is increased in steps of 1 °C.
When the set point in the heat exchanger charging circuit reaches the *Max. charging temperature* value, the set point is no longer increased. "Err 4" error message is generated.

Note: The set point in the heat exchanger circuit which is valid at the end of the charging cycle will be used again at the beginning of the next cycle.

If times-of-times have been set for DHW heating, the *Set point DHW temperature* adjusted at the rotary switch is applied during these times-of-use. Outside the times-of-use, the *Sustained DHW temperature* is used. This does not apply when a storage tank thermostat is used.

Time-controlled switchover of storage tank sensors

By configuring a second storage tank sensor SF2 over the function block CO4 -> F19 -1, it is possible to determine that the storage tank sensor SF1 is used for day mode in the DHW circuit and that the storage tank sensor SF2 is used for night mode. As a result, different storage tank volumes can be kept at a constant temperature according to a time schedule, and also to different temperatures if the *DHW set point* and *Sustained DHW temperature* differ from one another.

Stop storage tank charging

The controller stops charging the storage tank when the water temperature measured at sensor SF2 has reached the temperature T = *DHW temperature* + *hysteresis*. To do so, the exchanger charging pump is switched off first.
When there is no heating operation or when the flow temperature demand in the system is lower, the corresponding valve is closed. The storage tank charging pump is switched off after t = *lag of storage tank charging pump* x *valve transit time*.

Functions	WE	Configuration
Storage tank sensor SF1	1	CO4 -> F01 - 1
Storage tank sensor SF2	1	CO4 -> F02 - 1
Flow sensor VF4	0	CO4 -> F05
Time-controlled switchover of storage sensors	0	CO4 -> F19
Parameter	**WE**	**Rotary switch / Range of values**
DHW temperature set point or charging temperature set point with CO4 -> F01 - 0	55 °C	Bottom /Min. to max. DHW temperature
Parameters	**WE**	**Parameter level / Range of values**
Min. DHW temperature*	40 °C	PA4 / 5 to 90 °C
Max. DHW temperature*	60 °C	PA4 / 5 to 90 °C

Parameters	WE	Parameter level / Range of values
Hysteresis**	5 °C	PA4 / 0 to 30 °C
Charging temperature boost***	10 °C	PA4 / 0 to 50 °C
Max. charging temperature	80 °C	PA4 / 20 to 130 °C (only with VF4)
Lag of storage tank charging pump	0.5	PA4 / 0 to 10.0
Sustained DHW temperature	40 °C	PA4 / 5 to 90 °C

* Parameters serve as limitation of the adjustment range for the DHW temperature to be set at the rotary switch

** Deactivation value T = *DHW temperature + hysteresis*

*** Charging temperature T = *DHW temperature + charging temperature boost*

6.3 DHW heating in instantaneous heating system
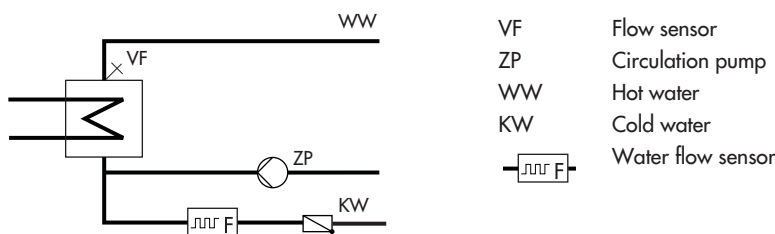
Fig. 11 · Schematics of an instantaneous heating system with water flow sensor (CO4 -> F04 - 1, select: AnA)

Without a water flow sensor or flow switch, the required *DHW temperature* at sensor VF is only regulated during the times-of-use of the circulation pump ZP. The water flow sensor or flow switch allow the controller to recognize exactly when DHW is being tapped. By deleting all the time-of-uses for the circulation pump, it is possible to regulate the required DHW temperature just while the DHW is being tapping.

Functions	WE	Configuration
Water flow sensor	0	CO4 -> F04 - 1
	AnA	AnA (water flow sensor), bin (flow switch)

Parameters	WE	Rotary switch / Range of values
DHW temperature set point	55 °C	Bottom /Min. to max. DHW temperature
Sustained DHW temperature	40 °C	PA4 / 5 to 90 °C

Parameters	WE	Parameter level / Range of values
Min. DHW temperature	40 °C	PA4 / 5 to 90 °C
Max. DHW temperature	60 °C	PA4 / 5 to 90 °C

6.4 DHW heating with solar system

The systems Anl 1.3 and 2.3 include a solar system for DHW heating. In these systems, the difference between the temperatures measured at storage sensor SF2 and the sensor at the solar collector VF3 is determined. The *Solar pump ON* parameter determines the minimum temperature difference between sensors VF3 and SF2 required to activate the solar pump. If the temperature difference falls below the value of *Solar pump OFF,* the solar pump is switched off. Basically, the solar pump is also switched off when the water temperature measured at sensor SF2 has reached the *Max. storage tank temperature.*

Note: The times-of-use of the DHW circuit do not affect the operation of the solar system.

After the key number 1999 has been entered, the operating hours of the solar pump are displayed in extended operating level.

Parameters	WE	Parameter level/Range of values
Solar pump ON	10 °C	PA4 / 1 to 30 °C
Solar pump OFF	3 °C	PA4 / 0 to 30 °C
Max. storage tank temperature	80 °C	PA4 / 20 to 90 °C

6.5 Intermediate heating operation

This function is only available in systems Anl 2.x, 4.1 and 4.5. With the setting CO4 -> F07 - 1, heating operation of the UP1 heating circuit is reactivated for a period of 10 minutes after 20 minutes of priority (heating deactivated during DHW heating). By setting CO4 -> F07 - 0, storage tank charging is given unlimited priority over the heating operation in the UP1 heating circuit.

Function	WE	Configuration
Intermediate heating	1	CO4 -> F07 - 1

6.6 Parallel pump operation

This function is only available in systems Anl 2.1 to 2.3, 4.1 and 4.5. With the setting CO4 -> F06 - 1, the circulation pump UP1 remains switched on during DHW heating unless certain operating situations occur. These situations include, for example, those when the current flow temperature demand of the pump circuit is lower than the adjusted *Flow limit temperature for parallel pump operation*. In this case, the controller applies priority operation, if necessary with intermediate heating. Once a parallel pump operation cycle has been activated and the time for *Stop parallel operation in case of deviation* has elapsed, system deviations greater than 5 °C cause the controller to suspend parallel operation for 10 minutes and to apply priority operation. Setting the *Stop parallel operation in case of deviation* to 0 minutes leads to a parallel operation once initiated remaining regardless of a deviation.

Function	WE	Configuration
Parallel pump operation	0	CO4 -> F06 - 1
	10 min	Stop parallel operation in case of deviation / 0 to 10 min
	40 °C	Flow limit temperature for parallel pump operation / 20 to 90 °C

6.7 Circulation pump operation during storage tank charging

With the setting CO4 -> F11 - 1, the circulation pump continues operation according to the set schedule even during storage tank charging.
With the setting CO4 -> F11 - 0, the circulation pump is switched off as soon as the storage tank charging pump is activated. The circulation pump returns to operate according to schedule when the storage tank charging pump has been switched off again.

Function	WE	Configuration
Circulation pump operation during storage tank charging	0	CO4 -> F11

6.8 Priority operation

In many district heating systems with primary DHW heating, the allotted amount of water does not cover the supply to the DHW heating and the heating at the same time. As a result, the capacity required for DHW heating needs to be taken from the heating system when great heating loads occur; and this, until DHW heating has been concluded.
Nevertheless, heating operation is not to be interrupted simply. Only the amount of energy required for DHW heating is to be deducted. This can be achieved by using the priority functions **Reverse control** and **Set-back operation**.

In system Anl 4.5, the priority functions **Reverse control** and **Set-back operation** can be activated for either one heating circuit or for both heating circuits:

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — Rk1

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — Rk2

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — Rk1+Rk2

6.8.1 Reverse control

In all systems with DHW heating and at least one heating circuit with control valve, DHW heating can be given priority by applying reverse control. With the setting CO4 -> F08 - 1, the temperature at the sensor VFx in the DHW circuit can be monitored.
In systems without the sensor VFx in the DHW circuit (e.g. Anl 4.5, 11.0), the temperature directly at the storage sensor SF1 is monitored. If system deviations occur after the time for *Activate priority in case of deviation* has elapsed, the set point of the heating circuit with control valve is gradually reduced each minute until the flow temperature set point has reached 5 °C at the minimum. How strongly the controller responds is determined by the *Correction factor*.

When the setting *Activate priority in case of deviation* = 0, the priority operation is introduced regardless of the time and temperature behaviour of the system. The control valves of the all heating circuits are closed.

Functions	WE	Configuration
Priority through reverse control	0	CO4 -> F08 - 1
	2 min	Activate priority in case of deviation / 0 to 10 min
	1.0	Correction factor / 0.1 to 10.0
Priority through set-back operation	0	CO4 -> F09 - 0

6.8.2 Set-back operation

In all systems with DHW heating and at least one heating circuit with control valve, DHW heating can be given priority by applying set-back operation. With the setting
CO4 -> F09 - 1, the temperature at the sensor VFx in the DHW circuit can be monitored.
In systems without the sensor VFx in the DHW circuit (e.g. Anl 4.5, 11.0), the temperature directly at the storage sensor SF1 is monitored. If system deviations occur after the time for *Activate priority in case of deviation* has elapsed, reduced operation is activated for the set point of the heating circuit with control valve.

When the setting *Activate priority in case of deviation* = 0, the priority operation is started in all heating circuits, regardless of the time and temperature behaviour of the system.

Functions	WE	Configuration
Priority through reverse control	0	CO4 -> F08 - 0
Priority through set-back operation	0	CO4 -> F09 - 1
	2 min	Activate priority in case of deviation / 0 to 10 min

6.9   Forced charging of the DHW storage tank

To provide the full room heating performance when the time-of-use of the heating circuits begins, existing storage tanks are charged one hour before the time-of-use of the heating circuits starts. For the individual controller, this means that storage tank charging is activated when the water temperature in the storage tank falls below the adjusted deactivation value of T = *DHW temperature + hysteresis*. The forced charging of the storage tank does not take place when the DHW circuit is not used at the beginning of the time-of-use set for the heating circuit(s).

Note: This function is not available when a storage tank thermostat is used.

6.10   Thermal disinfection

In all systems with DHW heating, the DHW storage tank is thermally disinfected on a selected *Day of the week* or every day.

▸   In systems with DHW storage tank, it is heated up, taking into account the *Charging temperature boost* parameter (or *Set point boost*, depending on the system) to the adjusted *Disinfection temperature*. Disinfection begins at the adjusted *Start time* and, at the latest, ends at the specified *Stop time*.
▸   In systems with DHW heating in instantaneous heating system, the function remains active taking into account the *Set point boost* parameter until the circulation pipe, measured at SF1, has reached the adjusted *Disinfection temperature,* provided disinfection has not been terminated because the *Stop time* has been reached.

The *Hold time of disinfection temperature* determines how long the disinfection temperature must be maintained within the adjusted time period to rate the process successful. If the *Hold time of disinfection temperature* is set to a value other than 0, no intermediate heating operation takes place during thermal disinfection.

If the *Start time* and *Stop time* are set to the identical time, the process is controlled according to the programmed time schedule depending on the switching state of a binary input (terminal 03/12, only possible without SF2/RF2). A break contact (bE = 0) or optionally also a

make contact (bE = 1) of the binary input starts the thermal disinfection. It stops at the latest when the switching state of the binary input next changes.

When the *Disinfection temperature* has not been reached before the end of the thermal disinfection cycle, "Err 3" error message is generated. This error message can also be generated prematurely if the remaining time until the disinfection temperature is reached is shorter than the adjusted *Hold time of disinfection temperature*. The error message is automatically reset when the *Disinfection temperature* is properly reached during the following thermal disinfection cycle.

Thermal disinfection for preventing legionella infection causes

▸ excessively high return flow temperatures during the disinfection cycle (return flow temperature limitation suspended),
▸ excessively high DHW temperatures after thermal disinfection has been concluded,
▸ lime scale (possibly), which can have a negative effect on heat exchanger performance.

Note: This function is not available when a storage tank thermostat is used.
Controllers that are linked over a device bus are subjected to return flow temperature limitation in the primary control circuit even during the thermal disinfection in a secondary controller.

Functions	WE	Configuration
Storage sensor SF1	1	CO4 -> F01 - 1
Thermal disinfection	0	CO4 -> F14 - 1
	3	Day of the week / 1–7, 1, 2, ..., 7 with 1–7 = every day, 1 = Monday, ..., 7 = Sunday
	0:00	Start time / 0:00h to 23:45h; in steps of 15 minutes
	4:00	Stop time / 0:00h to 23:45h; in steps of 15 minutes
	70 °C	Disinfection temperature / 60 to 90 °C
	10 °C	Set point boost / 0 to 50 °C
	0 °C	Hold time of disinfection temperature / 0 to 255 °C
	1	bE = 1, 0 (start of disinfection with BE (term. 03/12 = ON, OFF; only applies when Start time = Stop time)

7 System-wide functions

7.1 Automatic summer time/winter time changeover

The clock is automatically adjusted on the last Sunday in March at 2.00h and on the last Sunday in October at 3.00h.

Function	WE	Configuration
Summer time/winter time change-over	1	CO5 -> F08 - 1

7.2 Frost protection

Frost protection measures become effective whenever the outdoor temperature falls below the *Frost protection limit*. The switching differential to cancel the frost protection measures is always 1 °C.

▸ Frost protection program I (restricted frost protection): frost protection measures are taken only when all heating circuits in the system are in stand-by mode. The circulation pumps are forcedly switched on and their flow temperature set points are adjusted to 10 °C. The circulation pump in the DHW circuit is switched on automatically only when stand-by mode has been adjusted at the mode selector switch in all heating circuits. Nevertheless, the storage tank is always recharged to 10 °C if the storage tank temperature falls below 5 °C.

▸ Frost protection program II: the heating circuit circulation pumps are always switched on forcedly. The flow temperature set points of all heating circuits currently in stand-by mode are set to +10 °C. In the DHW circuit, the circulation pump is always activated. If the storage tank temperature falls below +5 °C, the storage tank is recharged to +10 °C.

Functions	WE	Configuration
Frost protection program I		CO5 -> F09 - 0
	3 °C	Frost protection limit / −15 to 3 °C
Frost protection program II		CO5 -> F09 - 1
	3 °C	Frost protection limit / −15 to 3 °C

Note: Frost protection operation of a pump, a heating circuit or the DHW circuit is active only when the frost protection icon ❄ is indicated on the display.
Fixed set point control without outdoor temperature sensor does not include frost protection monitoring in stand-by mode.

7.3 Forced operation of the pumps

When the heating circuit pumps have not been activated for 24 hours, forced operation of the pumps is started between 12.02h and 12.03h. This is done to avoid that the pumps get stuck when they are not operated for a longer period of time. In the DHW circuit, the circulation pump is operated between 12.04h and 12.05h, the other pumps between 12.05h and 12.06h.

7.4 Return flow temperature limitation

The temperature difference between the flow and return flow indicates how well the energy is used: the greater the difference, the higher the efficiency. A return flow sensor is sufficient to evaluate the temperature difference when the network flow temperatures are determined. The return flow temperature can be limited either to a value depending on the outdoor temperature (variable) or to a fixed value. When the temperature measured at return flow sensor RüF exceeds the limit value, the set point of the flow temperature (flow temperature of the heating, charging temperature) is reduced. As a result, the primary flow rate is reduced and the return flow temperature falls. In systems Anl 2.x and 4.1, the *Max. return flow temperature* parameter (PA4 level) is used for limitation in the primary circuit during DHW heating if it is greater than the parameter valid for the primary circuit. The *Limiting factor* determines how strongly the controller responds when the limit values are exceeded in either direction (PI algorithm).

If just P-action is to be implemented, set CO5 -> F16 - 1. This allows the I-action in the return flow temperature limitation algorithm of all control circuits of the controller to be deactivated. The set point reading (flow temperature of the heating, charging temperature) blinks to indicate that a return flow limitation is active in the control circuit concerned.

Note: Using weather-compensated control with gradient characteristic, the return flow temperature is limited to a fixed value by equating the parameters Return flow temperature foot *and* Max. return flow temperature *(PA1, 2).*

Note: If CO5 -> F00 - 1 is indicated, access to the return flow, flow rate and heat capacity settings are locked.

Function	WE	Configuration
Return flow sensors RüF1/2	1	CO1, 2, 4 -> F03 - 1
	1.0	Limiting factor/ 0.1 to 10.0

Function	WE	Configuration
Return flow temperature limitation with P algorithm	0	CO5 -> F16

Parameters	WE	Parameter level/Range of values
Gradient, return flow	1,2	PA1, 2 / 0.2 to 3.2
Level, return flow	0.0 °C	PA1, 2 / −30 to 30 °C
Return flow temperature foot	65 °C	PA1, 2 / 5 to 90 °C
Max. return flow temperature	65 °C	PA1, 2, 4 / 5 to 90 °C

or

Parameter	WE	Parameter level/Range of values
Return flow temp. points 1 to 4	65 °C	PA1, 2 / 5 to 90 °C

Note: To ensure that the preset return flow temperature limiting value can be met, make sure that
– the heating characteristic is not adjusted to ascent too steeply,
– the circulation pumps are not adjusted to run too rapidly,
– the heating systems have been calibrated.

7.5 Condensate accumulation control

Activate the **Limit deviation for OPEN signal** function to start up condensate accumulation plants, in particular to avoid problematic excess temperatures. The controller response to set point deviations which cause the primary valve to open is attenuated. The controller response to set point deviations which cause the control valve to close remains unaffected.

Function	WE	Configuration
Limit deviation for OPEN signal	0	CO1, 2, 4 -> F13 - 1
	2 °C	Max. system deviation / 2 to 10 °C

Note: The condensate accumulation control function can only be activated when no on/off control has been configured, i.e. when CO1, 2, 4 -> F12 - 1 applies.

7.6 Three-step control

The flow temperature can be controlled using a PI algorithm. The valve reacts to pulses that the controller sends upon an existing system deviation. The length of the first pulse, in particular, depends on the extent of the system deviation and the selected *Proportional gain K_P* (the pulse length increases as K_P increases). The pulse and pause lengths change continuously until the system deviation has been eliminated. The pause length between the single pulses is greatly influenced by the *Reset time T_N* (the pause length increases as T_N increases).
The *Valve transit time T_Y* specifies the time required by the valve to travel through the range of 0 to 100 %.

Functions	WE	Configuration
Control type three-step	1	CO1, 2, 4 -> F12 - 1, Rk_
	2.0	K_P (proportional gain) / 0.1 to 50.0
	120 s	T_N (reset time) / 1 to 999 sec
	45 s	T_Y (valve transit time) / 5, 10,15, …, 240 sec

7.7 On/off control

The flow temperature can be controlled, for example, by activating and deactivating a boiler. The controller switches on the boiler when the flow temperature falls below the set point by T = 0.5 x *hysteresis*. When the set point is exceeded by T = 0.5 x *hysteresis*, the boiler is switched off again. The greater the value you choose for *Hysteresis*, the lower will be the activation/deactivation frequency. By setting the *Minimum ON time*, an activated boiler remains switched on during this period regardless of the flow temperature fluctuations. Similarly, a deactivated boiler will remain switched off regardless of the flow temperature fluctuations if the *Min. OFF time* has been specified.

Functions	WE	Configuration
Control type on/off	1	CO1, 2, 4 -> F12 - 0
	5 °C	Hysteresis / 1 to 30 °C
	2 min	Min. ON time / 0 to 10 min
	2 min	Min. OFF time / 0 to 10 min

7.8 Releasing a control circuit/controller over the binary input

The release of an individual control circuit or the controller using the binary input only becomes effective when the respective control circuit is in automatic operating mode (icon   ). The released control circuit always works in automatic mode; the deactivated control circuit behaves as if it were transferred to stand-by mode.

It remains active, however, in any case for processing of external demand. The control circuit can be released over the binary input when the binary input is either open (bE = 0) or closed (bE = 1).

Note: *In systems with supplementary heating circuit without a valve (Anl 2.x, 4.x), BE1 only influences the operation of this heating circuit when the* **release Rk1** *function is configured, while the operation of the entire controller (except for processing of an external demand) is affected when the* **release controller** *function is configured. In system Anl 3.0, BE1 influences the operation of the entire controller (except for processing of an external demand).*

Functions	WE	Configuration
Release Rk 1 at BE1	0	CO1 -> F14 - 1
	1	bE = 1, 0
Release Rk 2 at BE2	0	CO2 -> F14 - 1
	1	bE = 1, 0
Release controller at BE1	0	CO5 -> F15 - 1
	1	bE=1, bE=0

7.9 Processing of external demand in Rk1

The controller can process binary or analog requests for an externally required signal by a more complex secondary system, provided the following requirements are met: the system is configured without storage tank sensor SF2 or room sensor RF2 and an analog request can be matched to "0 to 10 V corresponds with 0 to 120 °C flow temperature". In other words: flow temperature demand 12 °C/V. Analog requests below 10 °C (< 0.8 V input signal) are not processed; overvoltage generates a maximum flow set point of 130 °C. An additional processing of requests for an externally required signal over the device bus can be configured.

Note: *Overheating may occur in the heating circuits of the primary controller without control valve.*

Excessive charging temperatures in DHW circuits without control valve controlled by the primary controller are excluded when the default settings of the controller are used: while storage tank charging is active, no flow temperature higher than the charging temperature is adjusted by the primary controller. Nevertheless, if the **Priority for external demand** function is activated, the external demand is also processed during storage tank charging.

Function	WE	Configuration
Priority for external demand	0	CO4 -> F16 - 1

Processing of external demand, binary

Regardless of the operating mode set for control circuit Rk1 – except manual mode –, the flow temperature specified as *Set point for binary demand processing* is adjusted in control circuit Rk1 when the binary input (terminals 03/12) is either open (bE = 0) or closed (bE = 1).

Functions	WE	Configuration
Processing of external demand in Rk1	0	CO1 -> F15 - 1
Processing of external demand, 0 to 10 V	0	CO1 -> F16 - 0
Processing of external demand, binary	0	CO1 -> F17 - 1
	1	bE= 1, 0

Parameter	WE	Parameter level/Range of values
Set point for binary demand processing	40 °C	PA1 / 5 to 130 °C

Processing of external demand, 0 to 10 V

Regardless of the operating mode set for control circuit Rk1– except manual mode –, the controller regulates at least the flow temperature corresponding with the 0 to 10 V signal at terminals 03/13.

Functions	WE	Configuration
Processing of external demand in Rk1	0	CO1 -> F15 - 1
Processing of external demand, 0 to 10 V	0	CO1 -> F16 - 1
Processing of external demand, binary	0	CO1 -> F17 - 0

Parameter	WE	Parameter level/Range of values
Set point boost of primary exchanger control	5 °C	PA1 / 0 to 50 °C

7.10 Flow rate/heat capacity limitation in Rk1

Flow rate/heat capacity limitation can be implemented based on a pulse or standardized signal of 0/4 to 20 mA provided by the heat meter. This only applies in plants without SF2, RF2 and without processing of an external demand 0 to 10 V. Particularly when a standardized signal is applied, a heat meter (flow meter) with high measuring accuracy is required. Make sure that the controller is supplied with updated measured values at intervals of max. 5 seconds. In both cases (pulse or standardized signal), there are three different operating situations:

▸ A system with simultaneous room heating and DHW heating requires maximum energy.
▸ A system with a fully charged storage tank which performs only room heating requires less energy.
▸ A system which suspends room heating during DHW heating requires less energy.

As a result, three different maximum limit values can be specified:

▸ *Max. limit value* to determine the absolute upper limit
▸ *Max. limit value heating* for exclusive operation of the room heating
▸ *Max. limit value DHW* for exclusive operation of the DHW heating

In all systems without DHW heating or without heating circuit, only the *Max. limit value* for the flow rate or capacity can be set.

Note: *The limiting function is not available in systems Anl 10.0.*

7.10.1 Limitation using pulse input

Depending on the operating situation, a heat meter with pulse output connected to input WMZ/Bed (terminals 03/13) can be used to limit either the flow rate or the capacity in the system. All limit values are given in the unit "pulses per hour" [pulse/h]. As a result, the controller does not distinguish between a flow rate pulse signal or a capacity pulse signal. As the displayed current pulse rate P [pulse/h] (–> Extended operating level, key number 1999) is calculated depending on the interval between the received pulses, it is natural that the controller cannot react immediately to all rapid flow rate or capacity changes which occur in the system.
When the pulse rate reaches the current *Max. limit value*, the flow set point of control circuit Rk1 is reduced. How strongly the controller responds is determined by the *Limiting factor*.

Example to determine the limit value:

If a capacity of 30 kW is to be limited, the following limit value must be set for a heat meter with an output of one pulse per kilowatt-hour:

$$P \quad = \quad \frac{30 \text{ kW}}{1 \text{ kWh} / \text{pulse}} = 30 \text{ pulse} / \text{h}$$

Note: If CO5 -> F00 - 1 is indicated, access to the return flow, flow rate and heat capacity settings are locked.

Functions	WE	Configuration
Flow rate limitation (capacity limitation) in Rk1 with pulses at input WMZ	0	CO5 -> F10 - 1
	15 $^{pulse}/_{h}$	Max. limit value/ 3 to 800 $^{pulse}/_{h}$
	15 $^{pulse}/_{h}$	Max. limit value heating* / 3 to 800 $^{pulse}/_{h}$
	15 $^{pulse}/_{h}$	Max. limit value DHW* / 3 to 800 $^{pulse}/_{h}$
	1.0	Limiting factor / 0.1 to 10.0
Flow rate limitation in Rk1 with 0/4 to 20 mA at input WMZ	0	CO5 -> F11 - 0
		* Not in Anl 1.0, 1.5, 1.6, 3.0, 3.5, 4.0 and 11.x

7.10.2 Limitation using 0/4 to 20 mA signal

Depending on the operating situation, a heat meter at input WMZ/Bed (terminals 03/13) with a 0/4 to 20 mA output (connected in parallel to input WMZ/Bed using 50 Ω) can be used to limit the flow rate in the system. All limit values are given in the unit "cubic meters per hour" [m^3/h]. As a result, both a *Lower measuring range value* 0 or 4 mA and an *Upper measuring range value* must be adjusted in unit [m^3/h]. The current flow rate in [m^3/h] is displayed in the extended operating level (–> key number 1999).
When the flow rate reaches the current *Max. limit value*, the flow set point of control circuit Rk1 is reduced. How strongly the controller responds is determined by the *Limiting factor*.

Note: If CO5 -> F00 - 1 is indicated, access to the return flow, flow rate and heat capacity settings are locked.

Functions	WE	Configuration
Flow rate limitation (capacity limitation) in Rk1 with pulses at input WMZ	0	CO5 -> F10 - 0
Flow rate limitation in Rk1 using 0/4 to 20 mA at input WMZ	0	CO5 -> F11 - 1
	0	Lower measuring range value / 0, 4 mA
	1.5 $^{m^3}/_h$	Upper meas. range value 20 mA / 0.01 to 650 $^{m^3}/_h$
	1.5 $^{m^3}/_h$	Max. limit value / 0.01 to 650 $^{m^3}/_h$
	1.5 $^{m^3}/_h$	Max. limit value heating* / 0.01 to 650 $^{m^3}/_h$
	1.5 $^{m^3}/_h$	Max. limit value DHW* / 0.01 to 650 $^{m^3}/_h$
	1.0	Limiting factor / 0.1 to 10.0
		* Not in Anl 1.0, 1.5, 1.6, 3.0, 3.5, 4.0 and 11.x

7.10.3 Creep feed rate limitation over binary input

It is possible to report to the controller when the creep feed rate has fallen below a certain level by using a limit switch of the primary valve connected to the terminals 04/12 or to input RüF1. At terminals 04/12, either the break contact (bE = 0) of the binary input or the make contact (bE=1) of the binary input can be processed to indicate that the creep feed rate has fallen below a certain level. Only the make contact of the binary input can be processed at RüF1. Shortly after the alert, the controller closes the valve Rk1. As soon as the flow temperature falls below the set point by more than 5 °C after the valve has been closed, control operation is started again.

Function	WE	Parameter level/Range of values
Creep feed rate limitation	0	CO5 -> F12 - 1
	bin	bin (terminals 04/12), AnA (RüF1)
	1	When 'bin' selected: bE = 0, 1

7.10.4 Limitation of the calculated capacity

The controller is able to calculate the heat capacity used in the system and to limit it depending on the operational circumstances. To achieve this, it uses a connected 0/4 to 20 mA signal for the flow rate, a primary return flow sensor and a primary flow sensor. All limits are given in the unit kilowatt [kW]. The primary flow sensor is connected at input FG2.
The measured temperature of the primary flow sensor [°C] and the current capacity [kW] are displayed in the extended operating level (-> key number 1999).

The flow set point of control circuit Rk1 is reduced if the capacity reaches the current *Maximum limit*. How strongly the controller responds is determined by the *Limiting factor*.

Note: If CO5 -> F00 - 1 is indicated, access to the return flow, flow rate and heat capacity settings are locked.

Functions	WE	Configuration
Return flow sensor RüF1	1	CO1 -> F03 - 1
	1.0	Limiting factor / 0.1 to 10.0
Flow rate limitation in Rk1 using 0/4 to 20 mA at input WMZ	0	CO5 -> F11 - 1
	0 mA	Lower measuring range value / 0, 4 mA
	1.5 $\mathrm{m^3/h}$	Upper meas. range value 20 mA / 0.01 to 650 $\mathrm{m^3/h}$
	1.5 $\mathrm{m^3/h}$	Max. limit value heating*/ 0.01 to 650 $\mathrm{m^3/h}$
	1.5 $\mathrm{m^3/h}$	Max. limit value DHW*/ 0.01 to 650 $\mathrm{m^3/h}$
	1.0	Limiting factor / 0.1 to 10.0
Capacity limitation based on a connected flow rate signal in Rk1	0	CO5 -> F13 - 1
	1.5 kW	Maximum limit / 0.1 to 6500 kW
	1.5 kW	Max. limit value heating*/ 0.1 to 6500 kW
	1.5 kW	Max. limit value DHW*/ 0.1 to 6500 kW
	1.0	Limiting factor / 0.1 to 10.0
		* Not in Anl 1.0, 1.5, 1.6, 3.0, 3.5, 4.0 and 11.x

7.11 Device bus

» **TROVIS 5575-002x (Var.-ID 1104934 and 1551895):**
Version without device bus: The description of the device bus (section 7.11) and its functions (section 7.11.1 to 7.11.6) are not relevant for this version.

Using the device bus, it is possible to connect up to 32 device (from Series 55xx). For connection, the TROVIS 5575 Controller is, above all, equipped with the terminals 14/15. No attention must be paid to the polarity of the device bus wiring.

Activate the device bus and specify the device bus address for each device. Note that the device bus address 1 is to be set for just one controller in the system, and that all device bus addresses must be unique. The controller with device bus address 1 implements the required bus bias voltage for the system.

Once the controllers have been connected and preset, additional functions can be configured. These partly application-specific functions include:

▶ Requesting and processing an external demand (–> page 90)
▶ Sending and receiving outdoor temperatures (–> page 91)
▶ Synchronizing the clock (–> page 92)
▶ Priority over all controllers (–> page 92)
▶ Connecting a TROVIS 5570 Room Panel (–> page 93)
▶ Display error messages issued by the device bus (–> page 93)

7.11.1 Requesting and processing an external demand

In general, the controller which controls the primary valve or boiler (= primary controller) in a system of coupled controllers will process the demand of all subsequent controllers (= secondary controllers). As a result, the primary controller must be configured to receive this demand. Usually, the secondary controllers are configured such that they send their maximum flow set point to the primary controller. In special cases, however, it might happen that only the set point of a control circuit is to be sent. The appropriate function blocks to do so are also available. After the required function blocks have been activated, you must specify a register number.

The following applies: in a system of linked controllers which are hydraulically supplied by a primary controller all controllers (primary and secondary controllers) must have the same *Register no.* setting for the "demand registers". A controller which is configured to receive a demand in register no. 5 will not process a demand sent to register no. 6. The primary controller compares the received requested demands and its own requested demands and supplies the system with the required flow temperature – if necessary increased by the value of the parameter *Set point boost for primary exchanger control*.

Note: Overheating may occur in the heating circuits of the primary controller without control valve.

Primary controller:

Functions	WE	Configuration
Device bus	0	CO7 -> F01 - 1
	32	Device bus address
Receive external demand in Rk1	0	CO7 -> F15 - 1*
Receive external demand in Rk2	0	CO7 -> F17 - 1*
	5	* Register no. / 5 to 64
Parameter	**WE**	**Parameter level/Range of values**
Set point boost for primary exchanger control	5 °C	PA1 / 0 to 50 °C

Secondary controller:

Functions	WE	Configuration
Device bus	0	CO7 -> F01 - 1
	32	Device bus address
Send flow set point Rk1	0	CO7 -> F10 - 1*
Send flow set point Rk2	0	CO7 -> F11 - 1*
Send flow set point DHW	0	CO7 -> F13 - 1*
Send max. flow set point	0	CO7 -> F14 - 1*
	5	*Register no. / 5 to 64

Note: The register number specifies the location where the flow set points are saved in the primary controller. As a result, the register no. set in the secondary controller for CO7 -> F10 to F14 must be the same as the register no. adjusted under CO7 -> F15 in the primary controller.

Excessive charging temperatures in DHW circuits without control valve controlled by the primary controller are excluded when the default settings of the controller are used: while storage tank charging is active, no flow temperature higher than the charging temperature is adjusted by the primary controller.
Nevertheless, if the **Priority for external demand** function is activated, the external demand is also processed during storage tank charging.

Function	WE	Configuration
Priority for external demand	0	CO4 -> F16 - 1

7.11.2 Sending and receiving outdoor temperatures

Controllers equipped with an outdoor sensor can be configured to supply other controllers with the measured outdoor temperature via the device bus. This enables weather-compensated control even in systems which do not have their own outdoor sensor.

Functions	WE	Configuration
Device bus	0	CO7 -> F01 - 1
	32	Device bus address
Send value AF1	0	CO7 -> F06 - 1
	1	Register no. / 1 to 4

Functions	WE	Configuration
Receive value AF1	0	CO7 -> F07 - 1
	1	Register no. / 1 to 4
Receive value AF2 (receive an outdoor temp. independent of Rk1)	0	CO7 -> F09 - 1
	2	Register no. / 2 to 4

Note: The register no. for the outdoor temperature AF1 or AF2 must be the same for the sending and the receiving controller.

7.11.3 Synchronizing the clock

One controller in a system of linked controllers should perform the **Clock synchronization** function. This controller sends its system time once every 24 hours to all other controllers via the device bus.

Regardless of this function, the system time of all controllers is adapted immediately when the time setting of one controller is changed.

Functions	WE	Configuration
Device bus	0	CO7 -> F01 - 1
	32	Device bus address
Clock synchronization	0	CO7 -> F02 - 1

7.11.4 Priority over all controllers

It is possible to put the heating circuits of other controllers out of operation while the DHW heating is active when the controllers are linked to one another over a device bus. The return flow temperature limitation in the primary circuit can also be raised to the adjusted value for *Maximum return flow temperature* or for *Point 1* of the return flow temperature in a four-point characteristic when the controller is configured correspondingly. Controllers which should operate a DHW heating in this way need to issue *DHW heating active* alert. Controllers that have heating circuits which should be deactivated during this active DHW heating need to have the configuration **Receive release of Rk_** for the heating circuits concerned. If the circuit is just a DHW circuit which should influence one or more heating circuits, they need to be given the identical register number. If there are several DHW circuits in the system, selected heating circuits can only react to one or other active DHW circuits by assigning different register numbers.

If a secondary heating circuit with a valve should be put out of operation, the heating circuit valve concerned is closed; the heating circuit circulation pump remains in operation.

If a secondary heating circuit without a valve should be put out of operation, for example, in system Anl 2.x, just its heating circuit circulation pump and not the primary circuit Rk1 is put out of operation by using the configuration **Receive release of Rk1**.

Functions	WE	Configuration
Device bus	0	CO7 -> F01 - 1; Device bus address
Send "DHW heating active"	0	CO7 -> F20 - 1*
Receive release of Rk1	0	CO7 -> F21 - 1*
Receive release of Rk2	0	CO7 -> F22 - 1*
	32	*Register no. / 5 to 64

7.11.5 Connecting a TROVIS 5570 Room Panel

A TROVIS 5570 Room Panel (accessory) can be connected to the TROVIS 5575 Controller to measure the room temperature and for remote operation of a heating circuit. The room panel enables direct access to the operating mode and controller time settings as well as to all relevant parameters of a heating circuit. Additionally, the room temperature, the outdoor temperature and, if applicable, other data points can be viewed.
The terminals 5 and 6 of the room panel are connected to terminals 14 and 15 of the controller. The room panel is supplied with operating voltage (terminals 1 and 2 of the room panel (12 to 26.5 V AC/15 to 36 V DC) at the point of installation.

Functions	WE	Configuration
Device bus	0	CO7 -> F01 - 1; Device bus address
TROVIS 5570 Room Panel in Rk1	0	CO7 -> F03 - 1; Device bus address
TROVIS 5570 Room Panel in Rk2	0	CO7 -> F04 - 1; Device bus address

7.11.6 Display error messages issued by the device bus

The setting CO7 -> F16 - 1 causes the controller to react to the error messages from the device bus by generating the "Err 5" error message as long as the faults of the other device bus participants exist. The black squares under the corresponding numbers at the top of the display indicate which device bus address is defective for the first 23 device bus participants.

TROVIS 5575 Controllers can only pass on the "Err 1" error message (written bold in the following table) over the device bus.

Error message	Meaning
Err 1	**Sensor failure**
Err 2	–
Err 3	Disinfection temperature not reached
Err 4	Maximum charging temperature reached
Err 5	Error messages issued by device bus
Err 6	Temperature monitor alarm

Function	WE	Configuration
Display error messages issued by the device bus	0	CO7 -> F16 - 1

7.12 Feeder pump operation

In system Anl 3.0, the feeder pump UP1 only starts to operate in the default setting when a flow temperature demand of a secondary controller exists.
If CO5 -> F14 - 1 is configured, this is also the case when the controller's own secondary circuit requires heat.

Function	WE	Configuration
UP1 operation to cover own demand	0	CO5 -> F14 - 1

7.13 Locking manual level

To protect the heating system, this function can be used to lock the manual level. When this function has been activated, automatic mode is started when the rotary switch is set to   .

Function	WE	Configuration
Locking manual levels	0	CO5 -> F21 - 1

7.14 Locking the rotary switches

When this function has been activated, the controller remains in automatic mode regardless of the rotary switch positions. The rotary switches can no longer be used to adjust the controller settings.

Function	WE	Configuration
Locking the rotary switches	0	CO5 -> F22 - 1

7.15 Setting a customized key number

To avoid that unauthorized personnel modify functions and parameters of the controller, the default key number can be replaced with an individual key number.
Choose your custom key number between 0100 and 1900.

Proceed as follows:

⇨ Switch to configuration and parameter level. Display shows: **0 0 0 0**

◯ Set key number 1995.

✳ Confirm key number.

◯ Set valid key number.

✳ Confirm key number. Key number blinks.

◯ Set required custom key number.

✳ Confirm custom key number.
   This new key number is now valid.

8 Operational faults

A sensor failure is indicated by the blinking ¦ icon on the display. The "Error" alarm is displayed immediately. Press the rotary pushbutton to open the error level. It may be possible to view several error messages by turning the rotary pushbutton. As long as an error is present, error level is displayed, even though it has not been opened by pressing the rotary pushbutton. In addition, the display is illuminated for 1 second in intervals of 10 seconds when a fault persists.

> » **TROVIS 5575-000x (Var.-ID 1058686 and 1621285)**
> **and TROVIS 5575-001x (Var.-ID 1063809 and 1621288):**
> The display is illuminated approximately every 10 seconds for one second after a sensor fault occurs.
>
> » **TROVIS 5575-002x (Var.-IDs 1104934 and 1551895):**
> Version without illuminated display.

In the error level, the error is displayed as specified in the list below.

Note: After the system code number has been changed or restarting the controller, any error messages are suppressed for approx. three minutes.

8.1 Error list

▸ Err 1 = Sensor failure (–> section 8.2)
▸ Err 2 = Reserved
▸ Err 3 = Disinfection temperature not reached (–> section 6.10)
▸ Err 4 = Max. charging temperature reached (–> section 6.2)
▸ Err 5 = Display error messages issued by the device bus (–> section 7.11.6)
▸ Err 6 = Temperature monitoring alarm (–> section 8.3)

All errors messages, except for "Err 1", can be confirmed in the error level.

Note: By confirming the "Err 5", all other error messages from the device bus that are no longer relevant are deleted. These types of error messages can originate, for example, from device bus participants which were temporarily out of order or have been sent from devices which in the meantime have been replaced by devices with different device bus addresses.

When an error message is indicated, proceed as follows to confirm it:

⟨⟩ Select *Clr* on the display.

✳ Confirm the error message.

8.2 Sensor failure

According to the error list, sensor failures are indicated by displaying "Err 1" in error level. For detailed information, exit error level and view the different temperature values in operating level: each sensor icon displayed together with 3 horizontal lines instead of the measured value indicates a defective sensor. The following list explains how the controller responds to the failure of the different sensors.

▷ **Outdoor sensors AF1**: When the outdoor sensor fails, the controller adjusts a flow temperature set point of 50 °C or the *Max. flow temperature* when the *Max. flow temperature* (adjusted under PA1, 2) is smaller than 50 °C.

▷ **Flow sensor(s) heating circuit(s)**: When the flow sensors in the heating circuits are defective, the associated valve moves to 30 % travel. DHW heating using such a sensor to measure the charging temperature is suspended.

▷ **Flow sensors in the DHW circuit with control valve**: When the flow sensor VF4 fails, the controller behaves as if VF4 had not been configured. As soon as the control of the charging temperature becomes impossible (VF2 defective), the associated valve is closed.

▷ **Return flow sensors RüF1/2:** When the return flow sensor fails, the controller continues operation without return flow temperature limitation.

▷ **Room sensors RF1/2**: When the room sensor fails, the controller uses the settings for operation without room sensor. The controller, for example, switches from optimizing mode to reduced operation; adaptation mode is canceled. The last determined heating characteristic remains unchanged.

▷ **Storage sensors SF1/2**: When one of the two sensors fails, the storage tank is no longer charged (exception: solar system).

▷ **Solar sensors SF 3, VF 3**: When one of the two sensors fails, the storage tank in the solar circuit is no longer charged.

8.3 Temperature monitoring

When a system deviation greater than 10 °C persists in a control circuit for 30 minutes, the "Err 6" error message (temperature monitoring alarm) is generated.

Function	WE	Configuration
Temperature monitoring	0	CO5 -> F19 - 1

9 Memory module

The use of a memory module (accessory no. 1400-9379) is particularly useful to transfer all data from one TROVIS 5575 Controller to several other TROVIS 5575 Controllers. The memory module is plugged into the RJ45 connector integrated into the front panel. Once the module has been connected, "75 SP" is displayed. If the memory module already contains data from a different TROVIS 5575 Controller, turn the rotary pushbutton until "SP 75" is displayed

▶ Pressing the rotary pushbutton to confirm "75 SP" causes the controller settings to be transferred to the memory module.
▶ Pressing the rotary pushbutton to confirm "SP 75" causes the saved controller settings to be transferred from the memory module to the controller.

During the data transfer, the bars on the display indicate the progress. When the transfer was successful, "I.O." is displayed. After that, the connection between controller and memory module can be separated.

Using TROVIS-VIEW software (order no. 6661-1011), all of the controller settings can be configured and archived on a computer.

9.1 Data logging

A data logging module (order no. 1400-9378) saves the following controller data every two minutes:

▶ Temperatures measured by the sensors
▶ Control signals [%]
▶ Switching states of the pump outputs
▶ Access to the controller settings

The data logging module is connected to the RJ-45 jack at the front of the controller. Thanks to the compact design of the data logging module, the front cover of the controller can be kept closed even when the module is connected.

The controller starts to write over the oldest data as soon the memory of the data logging module is full after approximately eight days. The current memory capacity of the data logging module can be read in the extended operating level under *Info 2* as a second value (range of values: 0 to 6035). Directly after inserting the data logging module, data can be first read after the first scanning cycle has been performed.

The Datalogging Viewer software allows the data to be viewed in graph format. The USB converter 3 (order no. 1400-9377) is required to connect the data logging module to a computer. The Datalogging Viewer software is supplied with the USB converter 3.

10 Installation

All versions (TROVIS 5575-000x, TROVIS 5575-001x and TROVIS 5575-002x) can be supplied with a standard housing base or a high base: These have the following dimensions (in mm):

▸ Controller with standard housing base: 144 x 98 x 60
▸ Controller with high base: 144 x 98 x 81

The controller consists of the housing with the electronics and the housing base with the terminals. It is suitable for panel, wall and top hat rail mounting (Fig. 12).

Panel mounting

1. Remove both screws (1).
2. Pull apart the controller housing and the base.
3. Make a cut-out of 138 x 92 mm (W x H) in the control panel.
4. Insert the controller housing through the panel cut-out.
5. Insert one mounting clamp (2) each at the top and bottom or at the side. Screw the threaded rod towards the panel with a screwdriver so that the housing is clamped against the control panel.
6. Install the electrical connections at the back of the base as described in section 11.
7. Fit the controller housing.
8. Fasten both screws (1).

Wall mounting

1. Remove both screws (1).
2. Pull apart the controller housing and the base.
3. If necessary, drill holes with the specified dimensions in the appropriate places. Fasten the base with four screws.
4. Install the electrical connections at the base as described in section 11.
5. Remount the controller housing.
6. Fasten both screws (1).

Panel mounting

2

1

2

Wall mounting

Housing base

Controller housing

62

15

57

41

Top hat rail mounting

5

5

4

3
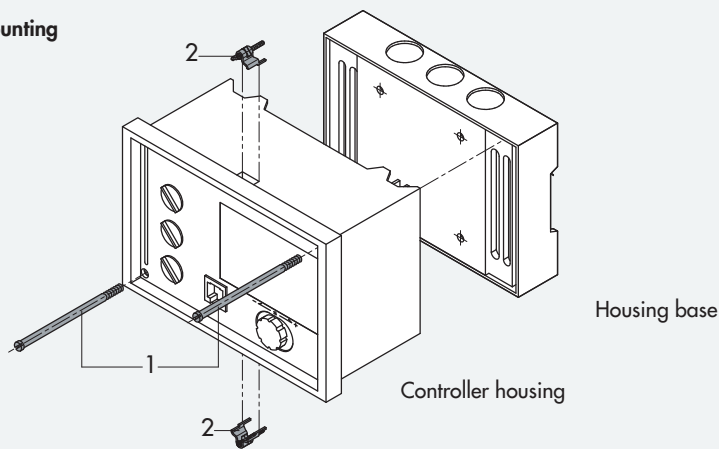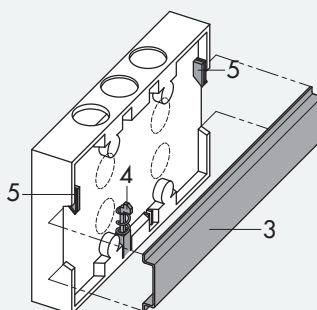
Fig. 12 · Installation

Top hat rail mounting

1. Fasten the spring-loaded hook (4) at the bottom of the top hat rail (3).
2. Slightly push the controller upwards and pull the upper hook (5) over the top hat rail.
3. Remove both screws (1).
4. Pull apart the controller housing and the base.
5. Install the electrical connections at the base as described in section 11.
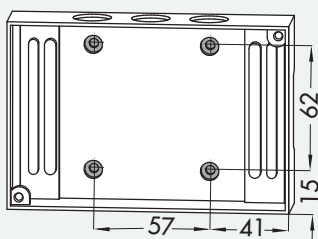6. Remount the controller housing.
7. Fasten both screws (1).

11   Electrical connection

⚠ *Caution!*

For electrical installation, you are required to observe the relevant electrotechnical regulations of the country of use as well as the regulations of the local power suppliers. Make sure all electrical connections are installed by trained and experienced personnel!

Notes on installing the electrical connections

▸ Install the 230 V power supply lines and the signal lines separately! To increase noise immunity, observe a minimum distance of 10 cm between the lines. Make sure the minimum distance is also observed when the lines are installed in a cabinet.

▸ The lines for digital signals (bus lines) and analog signals (sensor lines, analog outputs) must also be installed separately!

▸ In plants with a high electromagnetic noise level, we recommend to use shielded cables for the analog signal lines. Ground the shield at one side, either at the control cabinet inlet or outlet, using the largest possible cross-section. Connect the central grounding point and the PE grounding conductor with a cable ≥ 10 mm² using the shortest route.

▸ Inductances in the control cabinet, e.g. contactor coils, are to be equipped with suitable interference suppressors (RC elements).

▸ Control cabinet elements with high field strength, e.g. transformers or frequency converters, should be shielded with separators providing a good ground connection.

Overvoltage protection

▸ If signal lines are installed outside buildings or over large distances, make sure appropriate surge or overvoltage protection measures are taken. Such measures are indispensable for bus lines!

▸ The shield of signal lines installed outside buildings must have current conducting capacity and must be grounded on both sides.

▸ Surge diverters must be installed at the control cabinet inlet.

Connecting the controller

The controller is connected as illustrated in the wiring diagram.

Open the housing to connect the cables. To connect the feeding cables, make holes in the marked locations at the top, bottom or back of the rear part of the housing and fit suitable grommets or cable glands.

Connecting the sensors

Cables with a minimum cross-section of 2 x 0.5 mm² can be connected to the terminals at the back panel of the housing.

Connecting the water flow sensor (order no. 1400-9246)

A power supply unit and a 4.7 kΩ resistor are required for the water flow sensor to function.
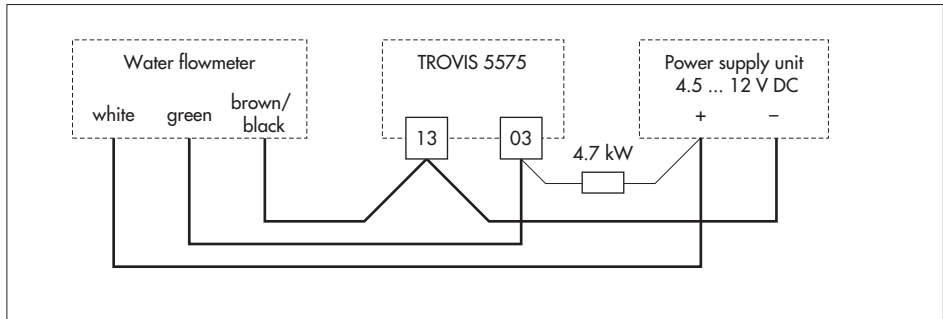
Connecting the actuators

▶ Three-step or on/off outputs:
Connect cables with at least 1.5 mm² suitable for damp locations to the terminals of the controller output. The direction of travel needs to be checked at start-up.

Note: Electric actuators are not automatically supplied with a voltage by the controller. They can be connected to an external voltage source over the terminals 25 or 28.
If this is not required, place a jumper from terminal 18 to terminal 25 and 28.

Connecting the pumps

Connect all cables with at least 1.5 mm² to the terminals of the controller as illustrated in the wiring diagram.

Legend for wiring diagrams:

AF	Outdoor sensor	BE	Binary input
FG	Potentiometer	BA	Binary output
RF	Room sensor	Rk	Control circuit
RüF	Return flow sensor	UP	Circulation pump
SF	Storage stank sensor	SLP	Storage tank charging pump
VF	Flow sensor	WMZ	Heat meter
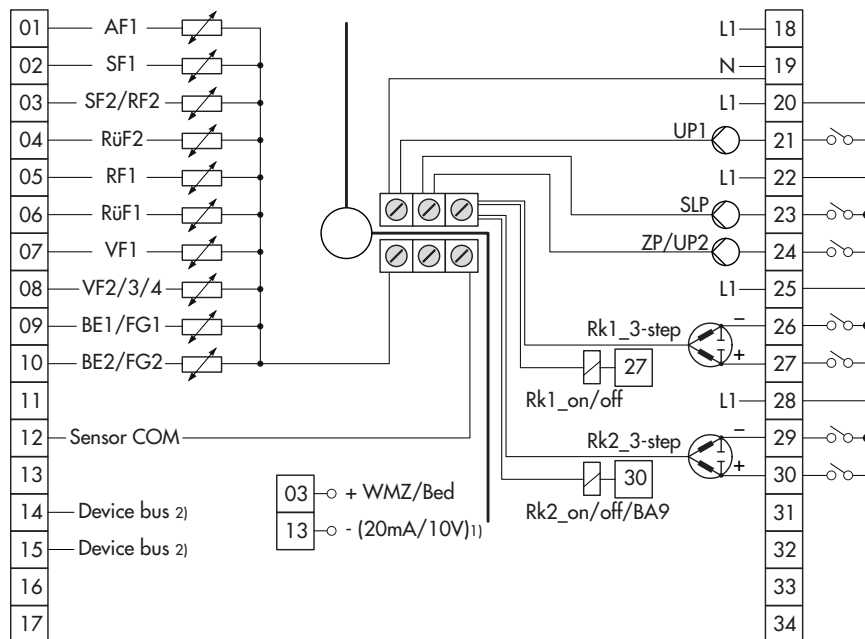
Terminal	Label		Terminal	Label
01	AF1		18	L1
02	SF1		19	N
03	SF2/RF2		20	L1
04	RüF2		21	UP1
05	RF1		22	L1
06	RüF1		23	SLP
07	VF1		24	ZP/UP2
08	VF2/3/4		25	L1
09	BE1/FG1		26	Rk1_3-step −
10	BE2/FG2		27	+
11			28	L1
12	Sensor COM		29	Rk2_3-step −
13			30	+
14	Device bus 2)		31	
15	Device bus 2)		32	
16			33	
17			34	

Rk1_on/off · 27
Rk2_on/off/BA9 · 30

03 + WMZ/Bed
13 − (20mA/10V)1)

Caution!
Never connect terminal 12 (grounding of sensor) and terminal 13 (grounding of 0 to 10 V/0 to 20 mA)!
1) To apply a 20 mA signal, a 50 Ω resistor is required between terminals 03 and 13!
2) TROVIS 5575-000x only

*Fig. 13 · Wiring diagram of **TROVIS 5575-000x** (Var.-ID 1058686 and 1621285) and*
*   **TROVIS 5575-002x** (Var.-ID 1104934 and 1551895) Controllers*

01	AF1		L1	18	
02	SF1		N	19	
03	SF2/RF2		L1	20	
04	RüF2		UP1	21	
05	RF1		UP2	22	
06	RüF1		SLP	23	
07	VF1		ZP	24	
08	VF2/3/4		L1	25	
09	BE1/FG1		Rk1_3-step	26	
10	BE2/FG2			27	
11		Rk1_on/off	L1	28	
12	Sensor COM		Rk2_3-step	29	
13				30	
14	Device bus	03 + WMZ/Bed	Rk2_on/off/BA9	31	
15	Device bus	13 - (20mA/10V)1)		32	
16				33	
17				34	

Caution!
Never connect terminal 12 (grounding of sensor) and terminal 13 (grounding of 0 to 10 V/0 to 20 mA)!
[1] To apply a 20 mA signal, a 50 Ω resistor is required between terminals 03 and 13!

*Fig. 14 · Wiring diagram of **TROVIS 5575-001x** Controller (Var.-ID 1063809 and 1621288)*

Terminal	Label
01	AF1
02	SF1
03	SF2/RF2
04	RüF2
05	RF1
06	RüF1
07	VF1
08	VF2/3/4
09	BE1/FG1
10	BE2/FG2
11	
12	Sensor COM
13	
14	Device bus 2)
15	Device bus 2)
16	
17	

03 — + WMZ/Bed
13 — - (20mA/10V)1)

Label	Terminal
L1	18
N	19
L1	20
UP1	21
L1	22
SLP	23
ZP/UP2	24
L1	25
Rk1_3-step	26
	27
Rk1_on/off	27
L1	28
Rk2_3-step	29
	30
Rk2_on/off/BA9	30
	31
	32
	33
	34

Caution!
Never connect terminal 12 (grounding of sensor) and terminal 13 (grounding of 0 to 10 V/0 to 20 mA)!
1) To apply a 20 mA signal, a 50 Ω resistor is required between terminals 03 and 13!
2) TROVIS 5575-000x only

*Fig. 15 · Wiring diagram of **TROVIS 5575-000x** (Var.-ID 1058686 and 1621285) and*
*   **TROVIS 5575-002x** (Var.-ID 1104934 and 1551895) Controllers **with high housing base***

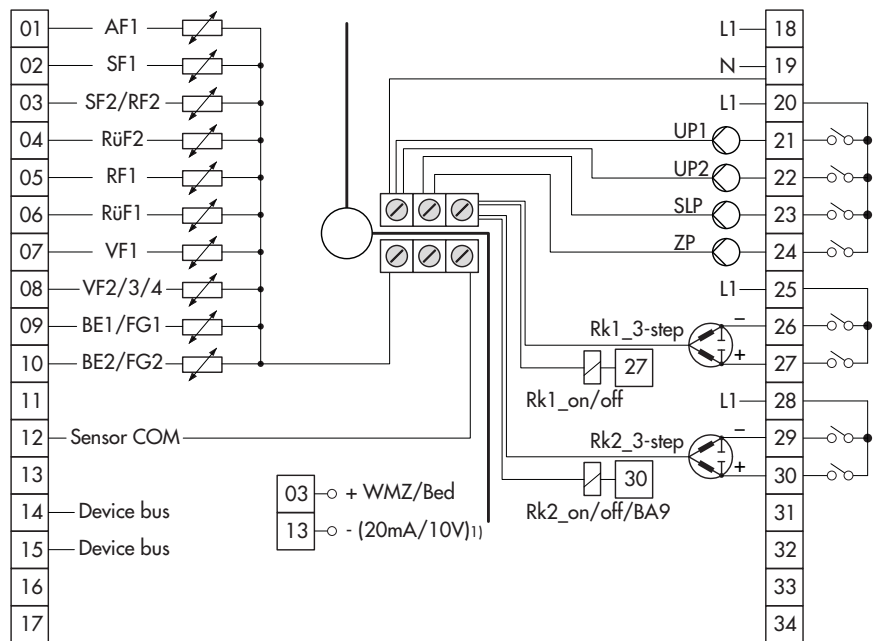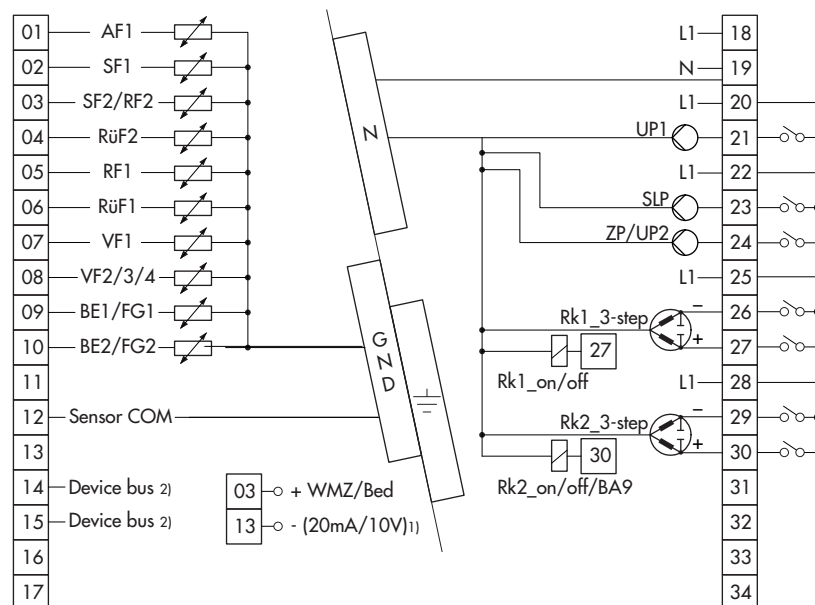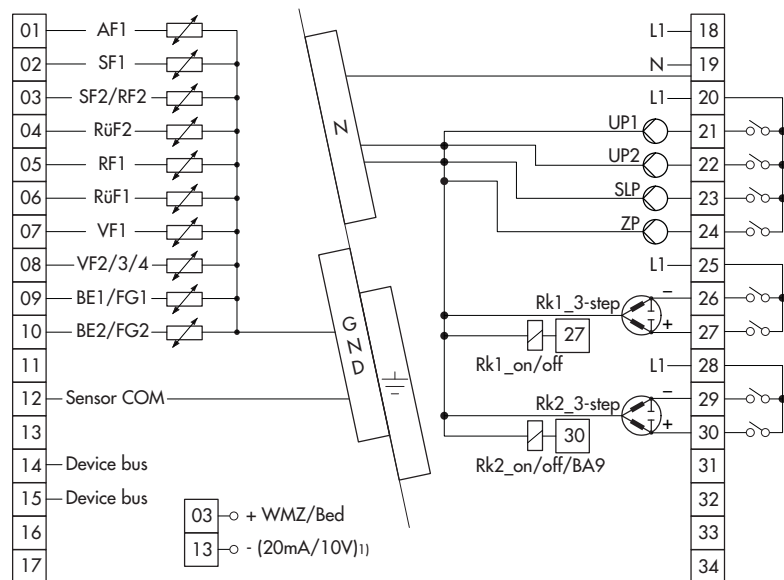|					
01	AF1		L1	18	
02	SF1		N	19	
03	SF2/RF2		L1	20	
04	RüF2		UP1	21	
05	RF1		UP2	22	
06	RüF1		SLP	23	
07	VF1		ZP	24	
08	VF2/3/4		L1	25	
09	BE1/FG1			26	
10	BE2/FG2		Rk1_3-step	27	
11			Rk1_on/off	28	
12	Sensor COM		L1	29	
13			Rk2_3-step	30	
14	Device bus		Rk2_on/off/BA9	31	
15	Device bus			32	
16		03 — + WMZ/Bed		33	
17		13 — - (20mA/10V)[1]		34	

Caution!
Never connect terminal 12 (grounding of sensor) and terminal 13 (grounding of 0 to 10 V/0 to 20 mA)!
[1] To apply a 20 mA signal, a 50 Ω resistor is required between terminals 03 and 13!

*Fig. 16 · Wiring diagram of **TROVIS 5575-001x** (Var.-IDs1063809 and 1621288) Controller **with high housing base***

Electrical connection

12 Appendix

12.1 Function block lists

CO1: Heating circuit Rk1 (not system Anl 1.9)*

F	Function	WE	Anl	Comments Function block parameters/Range of values (default setting)
01	Room sensor RF1	0	Not in Anl 1.5, 1.6, 3.x	CO1 -> F01 - 1: Temperature display and input FG1 for Type 5244/5257-5 Room Panel active TROVIS 5570 Room Panel: CO1 -> F01 - 1 **and** CO7 -> F03 - 1
02	Outdoor sensor AF1	0	1.5, 1.6, 3.5, 10.5	CO1 -> F02 - 1: Weather-compensated control active Outdoor temperature received over device bus: CO1 -> F02 - 1 **and** CO7 -> F07 - 1
		1	Not in Anl 1.5, 1.6, 3.5, 10.5	
03	Return flow sensor RüF1	0	1.2	CO1 -> F03 - 1: Sensor and limiting function active **Function block parameter:** Limiting factor / 0.1 to 10.0 (1.0)
		1	Not in Anl 1.2	
04	Cooling control	0	All*	CO1 -> F04 - 1: Cooling control, only with CO1 -> F11 - 1 The cooling control causes the reversal of the operating direction and a minimum limitation of the return flow temperature in Rk1.
05	Underfloor heating Drying of jointless floors	0	Not in Anl 1.5, 1.6, 3.x	CO1 -> F05 - 1: Limitation of the adjustment ranges **Function block parameters:** Start temperature / 20 to 60 °C (25 °C) Temperature rise / 0 to 10 °C/24 h (5 °C/24 h) Maximum temperature / 25 to 60 °C (45 °C) Maintaining time of max. temperature /1 to 10 days (1 day) Temperature reduction / 0 to 10 °C/ 24 h (0 °C / 24 h) ■ START, ■■ START, ■■■ START
06	Reserved			
07	Optimization	0	Not in Anl 1.5, 1.6, 3.x	CO1 -> F07 - 1: Only with • CO1 -> F01 - 1 • CO1 -> F02 - 1
08	Adaptation	0	Not in Anl 1.5, 1.6, 3.x	CO1 -> F08 - 1: Only with • CO1 -> F01 - 1 • CO1 -> F02 - 1 • CO1 -> F11 - 0

F	Function	WE	Anl	**Comments** **Function block parameters**/Range of values (default setting)
09	Flash adaptation	0	Not in Anl 1.5, 1.6, 3.x	CO1 -> F09 - 1 Only with CO1 -> F01 - 1 **Function block parameters:** Cycle time / 1 to 100 min (20 min) Gain K_p / 0 to 25 (0)
10	Reserved			
11	Four-point characteristic	0	Not in Anl 1.5, 1.6	CO1 -> F11 - 1: Four-point characteristic, only with CO1 -> F08 - 0 CO1 -> F11 - 0: Gradient characteristic
12	Control type three-step	1	All*	CO1 -> F12 - 1: Three-step control **Function block parameters:** K_p (proportional gain) / 0.1 to 50.0 (2.0) T_N (reset time) / 1 to 999 s (120 s) T_V (derivative-action time) / 0 s; do not change this value! T_Y (valve transit time) / 5, 10, 15, …, 240 s (45 s) CO1 -> F12 - 0: On/off control **Function block parameters:** Hysteresis / 1 to 30 °C (5 °C) Min. ON time / 0 to 10 min (2 min) Min. OFF time / 0 to 10 min (2 min)
13	Limitation of deviation for OPEN signal	0	All*	CO1 -> F13 - 1 only with CO1 -> F12 - 1 **Function block parameter:** Max. system deviation / 2 to 10 °C (2 °C)
14	Release Rk1 at BE1	0	All*	With CO1 -> F14 - 1 is FG1 without function **Select** bE / 1, 0 (1)
15	Processing of external demand in Rk1	0	All*	How the external demand is processed in Rk1 depends on CO1 -> F16, CO1 -> F17 and CO7 -> F15.
16	Processing of external demand 0 to 10 V Input term. 03/13	0	Not in systems with SF2/RF2	CO1 -> F16 - 1: Only with • CO1 -> F15 - 1 • CO1 -> F17 - 0
17	Processing of external demand, binary Input term. 03/12	0	Not in systems with SF2/RF2	CO1 ->F17 - 1: Only with • CO1 -> F15 - 1 • CO1 -> F16 - 0 **Select** bE / 1, 0 (1)

F Function block number, WE Default setting, Anl System code number

CO2: Heating circuit Rk2 (Systems Anl 3.0-3.4, 4.x and 10.0)*

F	Function	WE	Anl	**Comments** **Function block parameters**/Range of values (default setting)
01	Room sensor RF2	0	All*	CO2 -> F01 - 1: Temperature display and input FG2 for Type 5244/5257-5 Room Panel active TROVIS 5570 Room Panel: CO2 -> F01 - 1 **and** CO7 -> F04 - 1
02	Outdoor sensor AF2	0	All*	Without measured value AF2, the value AF1 is read Measured value AF2 only over device bus: CO2 -> F02 - 1 **and** CO7 -> F09 - 1
03	Return flow sensor RüF2	1 0	10.x 3.0, 4.x	CO2 -> F03 - 1: Sensor and limiting function active **Function block parameter:** Limiting factor / 0.1 to 10.0 (1.0)
04	Cooling control	0	All*	CO2 -> F04 - 1: Cooling control, only with CO2 -> F11 - 1 The cooling control causes the reversal of the operating direction and a minimum limitation of the return flow temperature in Rk2.
05	Underfloor heating Drying of jointless floors	0	All*	CO2 -> F05 - 1: Limitation of the adjustment ranges **Function block parameters:** Start temperature / 20 to 60 °C (25 °C) Temperature rise / 0 to 10 °C/24 h (5 °C/24 h) Maximum temperature / 25 to 60 °C (45 °C) Maintaining time of max. temperature/1 to 10 days (4 days) Temperature reduction / 0 to 10 °C/ 24 h (0 °C / 24 h) ▪ START, ▪▪ START, ▪▪▪ START
06	Reserved			
07	Optimization	0	All*	CO2 -> F07 - 1: Only with • CO2 -> F01 - 1 • CO1 -> F02 - 1

08	Adaptation	0	All*	CO2 -> F08 - 1: Only with • CO2 -> F01 - 1
				  • CO1 -> F02 - 1
				  • CO2 -> F11 - 0

09	Flash adaptation	0	All*	CO2 -> F09 - 1: Only with CO2 -> F01 - 1 **Function block parameter:** Cycle time / 1 to 100 min (20 min) Gain K_p / 0 to 25 (0)
10	Reserved			
11	Four-point characteristic	0	All*	CO2 -> F11 - 1: Four-point characteristic, only with CO2 -> F08 - 0 CO2 -> F11 - 0: Gradient characteristic

F	Function	WE	Anl	Comments **Function block parameters**/Range of values (default setting)
12	Control type three-step	1	All*	CO2 -> F12 - 1: Three-step control **Function block parameters**: K_P (proportional gain) / 0.1 to 50.0 (2.0) T_N (reset time) / 1 to 999 s (120 s) T_V (derivative-action time) / 0 s; do not change this value! T_Y (valve transit time) / 5, 10, 15, …, 240 s (45 s) CO2 -> F12 - 0 (only in system Anl 10.0): On/off control **Function block parameters:** Hysteresis / 1 to 30 °C (5 °C) Min. ON time / 0 to 10 min (2 min) Min. OFF time / 0 to 10 min (2 min)
13	Limitation of deviation for OPEN signal	0	All*	CO2 -> F13 - 1 only with CO2 -> F12 - 1 **Function block parameter:** Max. system deviation / 2 to 10 °C (2 °C)
14	Release Rk2 at BE2	0	All*	With CO2 -> F14 - 1 is FG1 without function **Select** bE / 1, 0 (1)

F Function block number, WE Default setting, Anl System code number

CO4: DHW circuit (Systems Anl 1.1–1.3, 1.5, 1.6, .19, 2.x, 3.1, 3.2, 4.1, 4.5, 10.1,11.x)*

F	Function	WE	Anl	Comments Function block parameters/Range of values (default setting)
01	Storage tank sensor SF1	1	[1]	CO4 -> F01 - 0 (not Anl 11.0): Storage tank thermostat, only with CO4 -> F02 - 0 [1] WE = 1 in Anl 1.1-3.3, 1.5, 1.6, 2.x, 3.1, 3.2, 4.1, 4.5, 10.1, 11.0, 11.2 [2] WE = 0 in Anl 1.9, 11.9
		0	[2]	
02	Storage tank sensor SF2 with the function of stopping the storage tank charging (not assigned to solar circuit)	0	1.1, 1.3, 1.5, 2.0, 2.1, 2.3, 3.1, 4.1, 4.5, 10.1, 11.0, 11.1	CO4 -> F02 - 1 (not in Anl 1.3, 1.9, 2.3, 11.0 and 11.9): only with CO4 -> F01 - 1
		1	1.2, 1.6, 2.2, 3.2, 11.2	
03	Return flow sensor RüF2	0	1.9, 11.x	CO4 -> F03 - 1: Sensor and limiting function active; **Function block parameter:** Limiting factor / 0.1 to 10.0 (1.0)
04	Water flow sensor	0	1.9, 11.9	CO4 -> F04 - 1: **option** AnA, bin (AnA) AnA: Analog analysis to terminals 03/13 (water flow sensor 1400-9246) bin: Binary analysis to terminals 03/13 (flow switch)
05	Flow sensor VF4	0	1.1, 1.2, 1.6, 2.2	CO4 -> F05 - 1: Flow sensor VF4 for measuring storage tank charging temperature active
06	Parallel pump operation	0	2.1–2.3, 4.1, 4.5	CO4 -> F06 - 1: **Function block parameters:** Stop parallel pump operation in case of deviation / 2 to 10 min (10 min) Flow limit temp. parallel pump operation / 20 to 90 °C (40 °C) CO4 -> F06 - 0: UP1 switched off during DHW heating
07	Intermediate heating	1	2.x, 4.1, 4.5	CO4 -> F07 - 1: After 20 minutes of DHW heating, heating operation in UP1 circuit reactivated for 10 minutes CO4 -> F07 - 0: Storage tank charging is given unlimited priority over heating operation in UP1 circuit
08	Priority through reverse control	0	1.1–1.3, 3.1, 3.2, 4.1, 4.5, 10.1, 11.x	CO4 -> F08 - 1 Only withCO4 -> F09 - 0 **Function block parameters:** Activate priority in case of deviation / 0 to 10 min (2 min) Correction factor / 0.1 to 10.0 (1.0)

F	Function	WE	Anl	Comments Function block parameters/Range of values (default setting)
09	Priority through set-back operation	0	1.1–1.3, 3.1, 3.2 4.1, 4.5, 10.1,11.x	CO4 -> F09 - 1 only with CO4 -> F08 - 0 **Function block parameter:** Activate priority in case of deviation / 0 to 10 min (2 min)
10	Circulation pump integrated into heat exchanger	0 1	1.6, 11.2 11.6	CO4 -> F10 - 1: Control of DHW circuit active while circulation pump ZP is operated
11	Operation of circulation pump during storage tank charging	0	Not Anl 1.9, 10.1, 11.0, 11.6 11.9	CO4 -> F11 - 1: Circulation pump (ZP) operates according to schedule during storage tank charging CO4 -> F11 - 0: ZP switched off during storage tank charging Circulation pump = ZP * In system Anl 11.6, the function can configured, but it does not have any effect.
12	Control type three-step	1	1.9, 11.x	CO4 -> F12 - 1: Three-step control **Function block parameters:** K_P (proportional gain) / 0.1 to 50.0 (2.0) T_N (reset time) / 1 to 999 s (120 s) T_Y (derivative-action time) / 0 s; do not change this value! T_Y (valve transit time) / 5, 10, 15, …, 240 s (45 s) CO4 -> F12 - 0 (only in systems Anl 11.0, 11.1): On/off control **Function block parameters:** Hysteresis / 1 to 30 °C (5 °C) Min. ON time / 0 to 10 min (2 min) Min. OFF time / 0 to 10 min (2 min)
13	Limit deviation for OPEN signal	0	1.9, 11.x	CO4 -> F13 - 1 only with CO4 -> F12 - 1 **Function block parameter:** Max. deviation / 2 to 10 °C (2 °C)
14	Thermal disinfection	0	All*	CO4 -> F14 - 1 only with CO4 -> F01 - 1 **Function block parameters:** Day of the week/ 1, 2, …, 7, 1–7 (3) Start time / 00:00 h to 23:45 h (00:00) Stop time / 00:00 h to 23:45 h (04:00) Disinfection temperature / 60 to 90 °C (70 °C) Set point boost / 0 to 50 °C (10 °C) Hold time of disinfection temperature / 0 to 255 min (0 min) Setting Start time = Stop time **Option**: bE /1, 0 (1), Input terminal 03/12 (only possible without SF2/RF2)

F	Function	WE	Anl	**Comments** **Function block parameters**/Range of values (default setting)
15	SLP ON depending on return flow temperature	0	1.5, 1.6, 2.0, 2.1, 2.3, 3.1, 4.1, 11.1, 11.2	For systems Anl 1.5, 1.6, 2.1, 2.3, 3.1 and 4.1: CO4 -> F15 - 1 only with CO1 -> F03 - 1 For system Anl 11.1 and 11.2: CO4 -> F15 - 1 only with CO4 -> F03 - 1
16	Priority for external demand	0	1.5, 1.6, 2.x, 3.1, 3.2, 4.1	With CO4 -> F16 - 1, a high external demand causes excessive charging temperatures in DHW circuits without control valve
19	Time-controlled switchover of storage tank sensors	0	Not Anl 1.9, 11.0, 11.9	CO4 -> F19 - 1 only with CO4 -> F02 - 1 SF1 for day mode and SF2 for night mode.
20	DHW circuit additionally controlled by a globe valve	0	11.1	CO4 -> F20 - 1: Return flow temperature limitation over a globe valve with VF2 in the heating register return of the storage tank.

F Function block number, WE Default setting, Anl System code number

CO5: System-wide functions (all systems)

If CO5 -> F00 - 1 is indicated, access to the return flow, flow rate and heat capacity settings are locked.

F	Function	WE	Anl	Comments Function block parameters/Range of values (default setting)
01	Sensor initialization	1	All	CO5 -> F01 - 1, -> F02 - 0, -> F03 - 0: Pt 1000 (Pt 100)
02		0	All	CO5 -> F01 - 0, -> F02 - 0, -> F03 - 0: PTC (Pt 100),
				CO5 -> F01 - 0, -> F02 - 1, -> F03 - 0: NTC (Pt 100)
03		0	All	CO5 -> F01 - 1, -> F02 - 1, -> F03 - 0: Ni 1000 (Pt 100) CO5 -> F01 - 0, -> F02 - 0, -> F03 - 1: Pt 500 (Pt 100)
04	Summer mode	0	Not Anl 1.9, 3.5	CO5 -> F04 - 1: Activation of time-controlled summer mode; **Function block parameters:** Start summer mode / 01.01 to 31.12 (01.06) No. of days until activation / 1 to 3 (2) Stop summer mode / 01.01 to 31.12 (30.09) No. of days until deactivation / 1 to 3 (1) OT limit value summer mode / 0 to 30 °C (18 °C)
05	Delayed OT adaptation when OT decreases	0	Not Anl 1.9	CO5 -> F05, 06 - 1: **Function block parameter:** Delay / 1 to 6 °C/h (3 °C/h)
06	Delayed OT adaptation when OT increases	0	Not Anl 1.9	
07	Reserved			
08	Automatic summer time/winter time changeover	1	All	
09	Frost protection program II	1	Not in Anl 1.5, 1.6, 1.9, 3.5	CO5 -> F09 - 0: Frost protection program I (restricted frost protection) **Function block parameters:** Frost protection limit / −15 to 3 °C (3 °C)
		0	1.5, 1.6, 1.9, 3.5	CO5 -> F09 - 1: Frost protection program II **Function block parameters:** Frost protection limit / −15 to 3 °C (3 °C)

F	Function	WE	Anl	**Comments** **Function block parameters**/Range of values (default setting)
10	Flow rate limitation (capacity limitation) in Rk1 with pulses at input WMZ	0	Not in Anl 1.9, 10.x; not in systems with SF2/RF2	CO5 -> F10 - 1 only with CO5 -> F11 - 0 Input "WMZ/Bed" (terminals 03/13) **Function block parameters:** Max. limit value / 3 to 800 $^{pulse}/_{h}$ (15 $^{pulse}/_{h}$) Max. limit value heating* / 3 to 800 $^{pulse}/_{h}$ (15 $^{pulse}/_{h}$) Max. limit value DHW* / 3 to 800 $^{pulse}/_{h}$ (15 $^{pulse}/_{h}$) Limiting factor / 0.1 to 10.0 (1.0)
11	Flow rate limitation in Rk1 with 0/4 to 20 mA at input WMZ (with 50 Ω in parallel to input WMZ terminal 03/13)	0	Not in Anl 10.x; not in systems with SF2/RF2	CO5 -> F11 - 1 only with CO5 -> F10 - 0 Input "WMZ/Bed" (terminal 03/13) **Function block parameters:** Lower measuring range value 0 or 4 mA Upper meas. range value 20 mA / 0.01 to 650 $^{m^3}/_{h}$ (1.5 $^{m^3}/_{h}$) Max. limit value/ 0.01 to 650 $^{m^3}/_{h}$ (1.5 $^{m^3}/_{h}$) Max. limit value heating* / 0.01 to 650 $^{m^3}/_{h}$ (1.5 $^{m^3}/_{h}$) Max. limit value DHW* / 0.01 to 650 $^{m^3}/_{h}$ (1.5 $^{m^3}/_{h}$) Limiting factor / 0.1 to 10.0 (1.0)
12	Creep feed rate limitation	0	Not in Anl 1.9	CO5 -> F12 - 1: Creep feed rate limitation, **Select** bin, AnA **Function block parameter** (when 'bin' selected): bE=1, bE=0 (bE=1)
13	Capacity limitation based on a connected flow rate signal in Rk1	0	Not in Anl 1.9, 10.x; not in systems with SF2/RF2	CO5 -> F13 - 1 only with CO5 -> F11 - 1 Connection of primary flow sensor at input FG2 **Function block parameters:** Max. limit value / 0.1 to 6500 kW (1.5 kW) Max. limit value heating* / 0.1 to 6500 kW (1.5 kW)) Max. limit value DHW* / 0.1 to 6500 kW (1.5 kW) Limiting factor / 0.1 to 10.0 (0.1)
14	UP1 operation to cover own demand	0	Anl 3.0	CO5 -> F14 - 1: Feeder pump UP1 also starts to cover demand of own control circuit
15	Release controller at BE1	0	All	CO5 -> F15 - 1: FG1 has no function bE= 1, bE=0 (bE=1)
16	Return flow temperature limitation with P algorithm	0	All	CO5 -> F16 - 1: Return flow temperature limitation with P-action only
19	Temperature monitoring	0	All	CO5 -> F19 - 1: Temperature monitoring active

F	Function	WE	Anl	**Comments** **Function block parameters**/Range of values (default setting)
20	Sensor calibration	1	All	CO5 -> F20 - 1: Adjusting all sensor calibration values CO5 -> F20 - 0: Deleting all sensor calibration values
21	Locking manual level	0	All	CO5 -> F21 - 1: In switch position , automatic mode is applied
22	Locking the rotary switches	0	All	CO5 -> F22 - 1: All rotary switches are locked
23	Outdoor temperature received over 0 to 10 V input	0	All	CO5 -> F23 - 1: Outdoor temperature received over 0 to 10 V input (terminals 03/13) **Function block parameters:** Lower transmission range / −30 to 100 °C (−20 °C) Upper transmission range / −30 to 100 °C (50 °C)
				* Not in systems Anl 1.0, 1.5, 1.6, 3.0, 3.5, 4.0, 11.x

F Function block number, WE Default setting, Anl System code number

CO7: Device bus (all systems; F02, F03, … only with CO7 -> F01 -1)

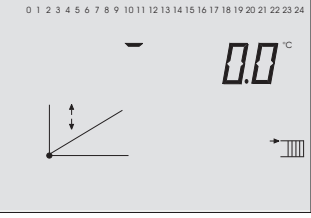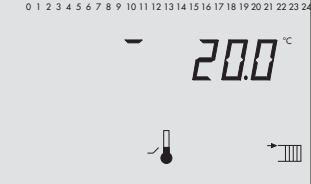Settings in CO7 level do not apply for TROVIS 5575-002x version (Var.-ID 1058686 and 1621285).
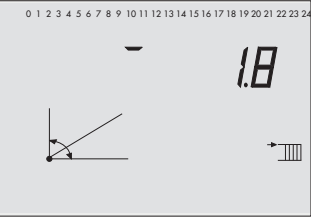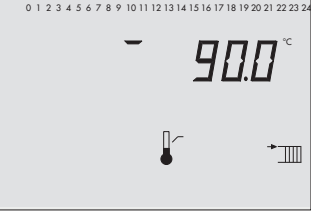
F	Function	WE	Anl	Comment Function block parameters/Range of values (default setting)
01	Device bus	0	All	CO7 -> F01 - 1: Device bus active **Function block parameter:** Device bus address /Auto*, 1 to 32 (32) *Auto = controller automatically searches for free device bus address in the system
02	Clock synchronization	0	All	CO7 -> F02 - 1: Controller sends its system time to all units connected to the device bus every 24 hours
03	TROVIS 5570 Room Panel in Rk1	0	1.0–1.3, 2.x, 4.x, 10.x, 11.x	CO7 -> F03 - 1: Communication with TROVIS 5570 active for RK1; CO1 -> F01 - 1 is set automatically **Function block parameter:** Device bus address / Auto*, 1 to 32 (32) *Auto = controller automatically searches for a room panel for which detection mode has been activated
04	TROVIS 5570 Room Panel in Rk2	0	3.x, 4.x, 10.x	CO2 -> F01 - 1: Communication with TROVIS 5570 active for Rk2; CO2 -> F01 - 1 is set automatically **Function block parameter:** Device bus address / Auto*, 1 to 32 (32) *Auto = controller automatically searches for a room panel for which detection mode has been activated
05	Reserved			
06	Send value AF1	0	Not Anl 1.9	**Function block parameter:** Register no. / 1 to 4 (1)
07	Receive value AF1	0	Not Anl 1.9	**Function block parameter:** Register no. / 1 to 4 (1)
08	Reserved			
09	Receive value AF2	0	Not Anl 1.9	**Function block parameter:** Register no. / 1 to 4 (2)
10	Send flow set point Rk1	0	All	CO7 -> F10 - 1: In systems Anl 1.5, 1.6, 2.x, 3.0, 4.0, 4.1, the storage tank charging set point is sent during DHW heating **Function block parameter:** Register no. / 5 to 64 (5)
11	Send flow set point Rk2	0	All	**Function block parameter:** Register no. / 5 to 64 (5)

F	Function	WE	Anl	Comment **Function block parameters**/Range of values (default setting)
12	Reserved			
13	Send flow set point DHW	0	All	CO7 -> F13 - 1: In level PA4, the *Charging temperature boost* parameter is generated **Function block parameter:** Register no. / 5 to 64 (5)
14	Send maximum flow set point	0	All	CO7 -> F14 - 1: Internally, the controller already determines the max. flow set point of its circuits and sends this value to the primary controller; **Function block parameter:** Register no. / 5 to 64 (5)
15	Receive external demand in Rk1	0	Not Anl 1.9	CO7 -> F15 - 1: External processing of external demand in Rk1 using device bus **Function block parameter:** Register no. / 5 to 64 (5)
16	Display error messages issued by device bus	0	All	CO7 -> F16 - 1: Controller generates "Err 5" error message as long as faults of other device bus participants exist.
17	Receive external demand in Rk2	0	Not Anl 1.x, 2.x	CO7 -> F17 - 1: External processing of external demand in Rk2 using device bus **Function block parameter:** Register no. / 5 to 64 (5)
18	Reserved			
19	Raise return flow temperature limit value	0	All	CO7 -> F19 - 1: Return flow temperature limit value raised of Rk1 when "DHW heating active" message issued by device bus **Function block parameters:** Register no. / 5 to 64 (32)
20	Send "DHW heating active"	0	All	CO7 -> F20 - 1: **Function block parameters:** Register no. / 5 to 64 (32)
21	Receive release of Rk1	0	All	CO7 -> F21 - 1: **Function block parameter:** Register no. / 5 to 64 (32)
22	Receive release of Rk2	0	All	CO7 -> F22 - 1: **Function block parameter:** Register no. / 5 to 64 (32)

F Function block number, WE Default setting, Anl System code number

12.2 Parameter lists

PA1 (⎯): Parameter level Rk1
**PA2 (=): Parameter level Heating circuit Rk 2**

Display	Parameter designation Range of values (default setting)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 *1.8*	Gradient, flow 0.2 to 3.2 (1.8) (with CO1, 2 -> F05 - 1: 0.2 to 1.0 (1.0) applies)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 *0.0* ℃	Level (parallel shift) −30 to 30 °C (0 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 *20.0* ℃	Min. flow temperature 5 to 130 °C (20 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 *90.0* ℃	Max. flow temperature 5 to 130 °C (90 °C) (with CO1, 2 -> F05 - 1: 5 to 50 °C (50 °C) applies)

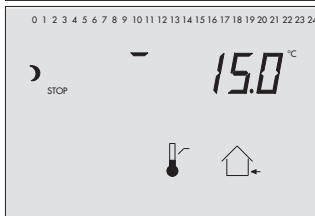| **Display**	**Parameter designation** Range of values (default setting)
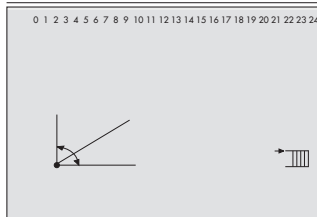
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Four-point characteristic
	
	✳ Press rotary pushbutton to adjust the parameters
	     outdoor temperature,
	     flow temperature,
	     reduced flow temperature and
	     return flow temperature.
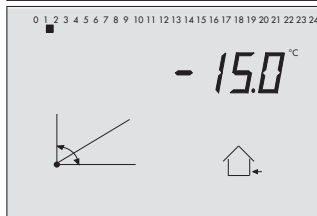
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 - 15.0 °C	Four-point characteristic Point 1: Outdoor temperature Outdoor temperatures of the points 2, 3, 4 are marked by squares below the numbers 2, 3, 4. −30 to 50 °C (point 1: −15 °C, point 2: −5 °C, point 3: 5 °C, point 4: 15 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 70.0 °C	Four-point characteristic Point 1: Flow temperature Flow temperatures of the points 2, 3, 4 are marked by squares below the numbers 2, 3, 4. 5 to 130 °C (point 1: 70 °C, point 2: 55 °C, point 3: 40 °C, point 4: 25 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 60.0 °C	Four-point characteristic Point 1: Reduced flow temperature Reduced flow temperatures of the points 2, 3, 4 are marked by squares below the numbers 2, 3, 4. 5 to 130 °C (point 1: 60 °C, point 2: 40 °C, point 3: 20 °C, point 4: 20 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 65.0 °C	Four-point characteristic Point 1: Return flow temperature Return flow temperatures of the points 2, 3, 4 are marked by squares below the numbers 2, 3, 4. 5 to 90 °C (points 1 to 4: 65 °C)
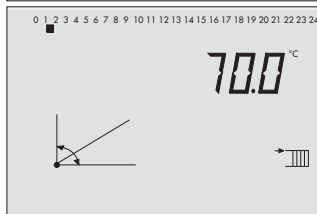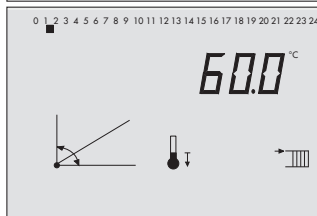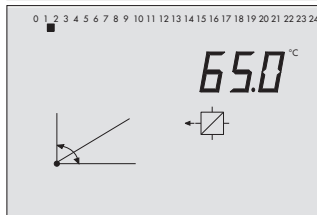
	Parameter designation
Display	Range of values (default setting)
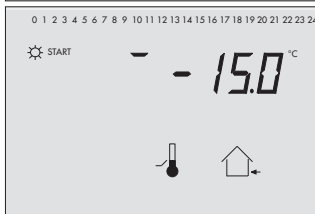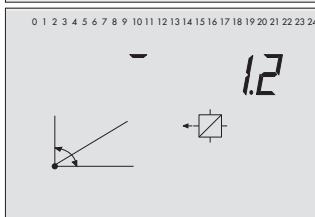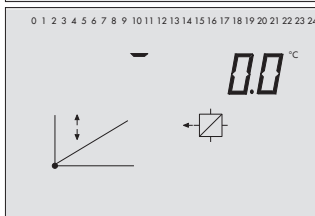
Display	Parameter designation / Range of values (default setting)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — 22.0 °C STOP	OT deactivation value rated operation 0 to 50 °C (22 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — 15.0 °C STOP	OT deactivation value in reduced operation −20 to 50 °C (15 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 START — - 15.0 °C	OT activation value in rated operation −20 to 5 °C (−15 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — 1.2	Gradient, return flow 0.2 to 3.2 (1.2)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — 0.0 °C	Level, return flow −30 to 30 °C (0 °C)
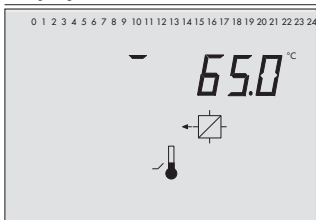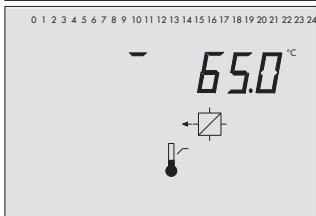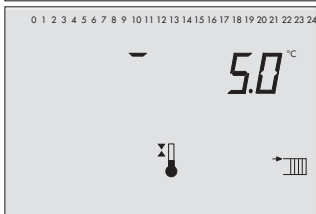
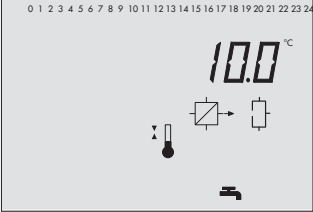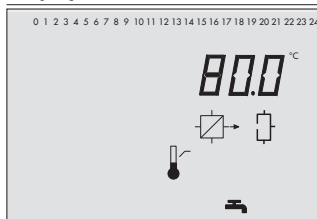| Display	Parameter designation Range of values (default setting)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — **65.0** °C	Return flow temperature foot 5 to 90 °C (65 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — **65.0** °C	Max. return flow temperature 5 to 90 °C (65 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — **5.0** °C	Set point boost for primary exchanger control 0 to 50 °C (5 °C) Only in parameter level PA1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 — **40.0** °C	Set point for binary demand processing 5 to 130 °C (40 °C) Only in parameter level PA1
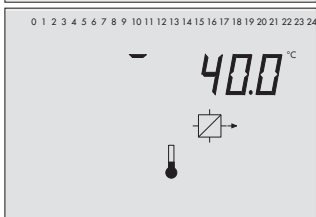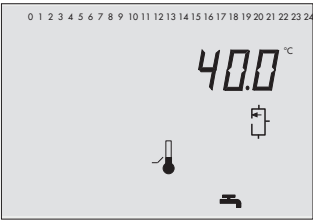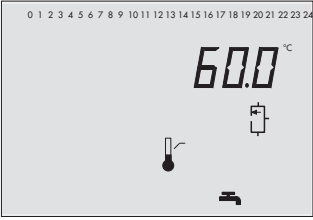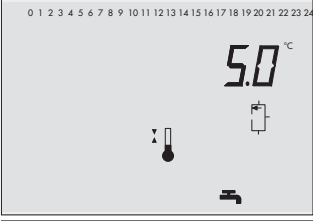
PA4: Parameters DHW heating
(Systems Anl 1.1 to 1.3, 1.5, 1.6, 1.9, 2.x, 4.1, 4.5 and 11.x)

Display	Parameter designation Range of values (default setting)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 **40.0** °C	Min. DHW temperature 5 to 90 °C (40 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 **60.0** °C	Max. DHW temperature 5 to 90 °C (60 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 **5.0** °C	Hysteresis 0 to 30 °C (5 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 **10.0** °C	Charging temperature boost 0 to 50 °C (10 °C)

Display

Parameter designation
Range of values (default setting)
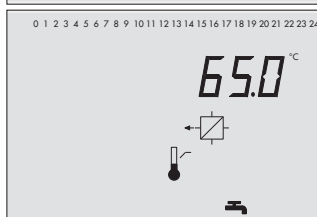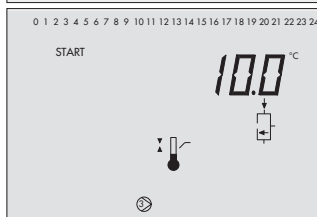
Display	Parameter designation
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 **80.0** °C	Max. charging temperature 20 to 130 °C (80 °C)
01234567891 01 11 21 31 41 51 61 71 81 9202 12 22 32 4 STOP **0.5**	Lag of storage tank charging pump 0 to 10.0 (0.5)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 **40.0** °C	Sustained DHW temperature 5 to 90 °C (40 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 **65.0** °C	Max. return flow temperature 0 to 90 °C (65 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 START **10.0** °C	Solar pump ON 1 to 30 °C (10 °C)
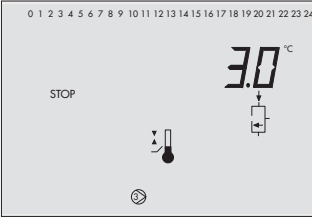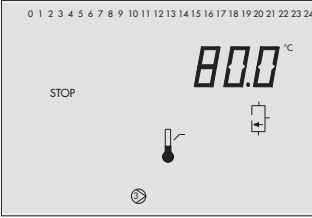
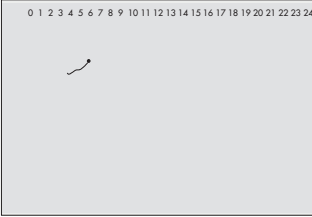| Display	Parameter designation Range of values (default setting)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 _**3.0**_ °C STOP	Solar pump OFF 0 to 30 °C (3 °C)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 _**80.0**_ °C STOP	Max. storage tank temperature 20 to 90 °C (80 °C)

PA5: Parameters for several systems (all systems)

Display	Parameter designation Range of values (default setting)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Public holidays 01.01 to 31.12 (–> section 1.8.1)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24	Vacation periods 01.01 to 31.12 (–> section 1.8.2)
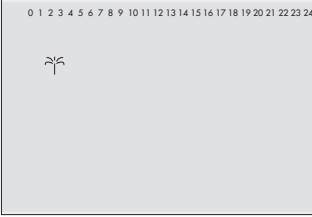
12.3 Assignment of the rotary switches

System Anl	Top rotary switch	Middle rotary switch	Bottom rotary switch
1.0	Heating circuit Rk1	–	–
1.1 to 1.3	Heating circuit Rk1	–	DHW heating
1.5, 1.6	Primary heat exchanger circuit Rk1	–	DHW heating
1.9	–	–	DHW heating
11.x	–	–	DHW heating
2.x	Heating circuit Rk1	–	DHW heating
3.0	Primary heat exchanger circuit and heating circuit Rk1, Rk2	–	–
3.1 and 3.2	Primary heat exchanger circuit and heating circuit Rk1, Rk2	–	DHW heating
3.5	Primary heat exchanger circuit Rk1	–	–
4.x	Heating circuit Rk1	Supplementary heating circuit Rk2	DHW heating
10.0	Heating circuit Rk1	Heating circuit Rk2	–
10.1	Heating circuit Rk1	Heating circuit Rk2	DHW heating
10.5	Heating circuit Rk1	Heating circuit Rk2	–
11.x	Heating circuit Rk1	–	DHW heating Rk2

12.4 Sensor resistance tables

Resistance values with PTC resistors

Type 5224 Outdoor Temperature Sensors, Type 5264 and Type 5265 Flow and Return Flow
Temperature Sensors, Type 5264 Storage Tank Temperature Sensors

°C	−20	−10	0	10	20	25	30	40	50	60	70	80	90	100	110	120
Ω	694	757	825	896	971	1010	1050	1132	1219	1309	1402	1500	1601	1706	1815	1925

Type 5244 Room Panel

Switch position   , terminals 1 and 2

°C	10	15	20	25	30
Ω	679	699	720	741	762

Resistance values with Pt 1000 resistors

Type 5227-2 Outdoor Temperature Sensor, Type 5277-2 (thermowell required) and
Type 5267-2 (contact sensor) Flow, Return Flow and Storage Tank Temperature Sensors.
Type 5257-1, Type 5257-5 (room panel) Room Temperature Sensors.

°C	−35	−30	−25	−20	−15	−10	−5	0	5	10
Ω	862.5	882.2	901.9	921.6	941.2	960.9	980.4	1000.0	1019.5	1039.0
°C	15	20	25	30	35	40	45	50	55	60
Ω	1058.5	1077.9	1097.3	1116.7	1136.1	1155.4	1174.7	1194.0	1213.2	1232.4
°C	65	70	75	80	85	90	95	100	105	110
Ω	1251.6	1270.7	1289.8	1308.9	1328.0	1347.0	1366.0	1385.0	1403.9	1422.9
°C	115	120	125	130	135	140	145	150		
Ω	1441.7	1460.6	1479.4	1498.2	1517.0	1535.8	1554.5	1573.1		

Resistance values with Pt 500 resistors

Halve the listed resistance values with Pt 1000 resistors

Resistance values with Ni 1000 resistors (acc. to DIN 43760)

°C	−35	−30	−25	−20	−15	−10	−5	0	5	10
Ω	816.2	841.5	867.0	893.0	919.2	945.8	972.7	1000.0	1027.6	1055.5
°C	15	20	25	30	35	40	45	50	55	60
Ω	1083.8	1112.4	1141.3	1170.6	1200.2	1230.1	1260.4	1291.1	1322.0	1353.4
°C	65	70	75	80	85	90	95	100	105	110
Ω	1385.1	1417.2	1449.7	1482.5	1515.7	1549.3	1583.4	1617.8	1652.6	1687.9
°C	115	120	125	130	135	140	145	150		
Ω	1723.6	1759.7	1796.3	1833.3	1870.9	1908.9	1947.4	1986.3		

12.5 Technical data

Inputs	8 inputs for temperature sensor Pt 1000/Pt 100, PTC/Pt 100, NTC/Pt 100, Ni 1000/Pt 100 or Pt 500/Pt 100 and 2 binary inputs, Input terminal 03 alternatively for flow rate signal from heat meters or demand signal from supplementary control circuits, 4(0) to 20 mA with 50 Ω parallel resistor or 0 to 10 V (demand: 0 to 10 V correspond with 20 to 120 °C flow temperature)
Outputs	2 x three-step signal: load max. 250 V AC, 2A alternatively 2 x on/off signal: load max. 250 V AC, 2A
TROVIS 5575-000x [1] and 5575-002x [3]	3 x pump output: load max. 250 V AC, 2A; all outputs relay outputs with varistor suppression
TROVIS 5575-001x [2]	4 x pump output: load max. 250 V AC, 2A; all outputs relay outputs with varistor suppression
Interfaces TROVIS 5575-000x [1] and 5575-001x [2]	Device bus RS-485 interface for max. 32 bus devices, (2-wire connection, polarity independent, connection to terminals 14/15)
Operating voltage	165 to 250 V, 48 to 62 Hz, max. 4 VA
Ambient temperature	0 to 40 °C (operation), −10 °C to 60 °C (storage and transportation)
Degree of protection	IP 40 according to IEC 529
Class of protection	II according to VDE 0106
Degree of contamination	2 according to VDE 0110
Overvoltage category	II according to VDE 0110
Humidity rating	F according to VDE 40040
Noise immunity	According to EN 61000-6-1
Noise emission	According to EN 61000-6-3
Weight	Approx. 0.5 kg

[1] Var.-ID 1058686 and 1621285

[2] Var.-ID 1063809 and 1621288

[3] Var.-ID 1104934 and 1551895

12.6 Customer data

Station	
Operator	
Responsible SAMSON office	
System code number	

Function block settings in the configuration levels

	CO 1	CO 2	CO 4	CO 5	CO 7
F01					
F02					
F03					
F04					
F05					
F06					
F07					
F08					
F09					
F10					
F11					
F12					
F13					
F14					
F15					
F16					
F17					
F18					
F19					
F20					
F21					
F22					
F23					

Parameters in level 1 and level 2 (control circuit 1 and 2)

Parameters (PA1 and PA2)	Level 1	Level 2	Range of values
Gradient, flow			0.2 to 3.2
Level, flow			−30 to 30 °C
Min. flow temperature			5 to 130 °C
Max. flow temperature			5 to 130 °C
Four-point characteristic			
Outdoor temperature; Point 1			−30 to 50 °C
Outdoor temperature; Point 2			−30 to 50 °C
Outdoor temperature; Point 3			−30 to 50 °C
Outdoor temperature; Point 4			−30 to 50 °C
Flow temperature; Point 1			5 to 130 °C
Flow temperature; Point 2			5 to 130 °C
Flow temperature; Point 3			5 to 130 °C
Flow temperature; Point 4			5 to 130 °C
Reduced flow temperature; Point 1			5 to 130 °C
Reduced flow temperature; Point 2			5 to 130 °C
Reduced flow temperature; Point 3			5 to 130 °C
Reduced flow temperature; Point 4			5 to 130 °C
Return flow temperature; Point 1			5 to 90 °C
Return flow temperature; Point 2			5 to 90 °C
Return flow temperature; Point 3			5 to 90 °C
Return flow temperature; Point 4			5 to 90 °C
OT deactivation value rated operation			0 to 50 °C
OT deactivation value reduced operation			−20 to 50 °C
OT activation value rated operation			−20 to 5 °C
Gradient, return flow			0.2 to 3.2
Level, return flow			−30 to 30 °C
Return flow temperature foot			5 to 90 °C
Max. return flow temperature			5 to 90 °C
Set point boost f. primary exchanger control			0 to 50 °C
Processing of external demand, binary			5 to 130 °C

Function block parameters (CO1 and CO2)	Level 1	Level 2	Range of values
Limiting factor (F03 - 1)			0.1 to 10.0
Start temperature (F05 - 1)			20 to 60 °C
Temperature rise (F05 - 1)			0 to 10 °C/24 h
Maximum temperature (F05 - 1)			25 to 60 °C
Maintaining time of max. temp. (F05 - 1)			1 to 10 days
Temperature reduction (F05 - 1)			0 to 10 °C/24 h
Cycle time (F09 - 1)			0/1 to 100 min
K_p (F09 - 1)			0 to 25
Proportional gain K_p (F12 - 1)			0.1 to 50
Reset time T_N (F12 - 1)			1 to 999 s
Derivative-action time T_V (F12 - 1)			0 s; Do not change!
Valve transit time T_Y (F12 - 1)			5 to 240 s
Hysteresis (F12 - 0)			1 to 30 °C
Min. ON time (F12 - 0)			0 to 10 min
Min. OFF time (F12 - 0)			0 to 10 min
Max. system deviation (F13 - 1)			2 to 10 °C
Binary input bE (F14 - 1)			1, 0
Binary input bE (F17 - 1)			1, 0

Parameters in level 4 (DHW heating)

Parameters (PA4)	Level 4	Range of values
Min. DHW temperature		5 to 90 °C
Max. DHW temperature		5 to 90 °C
Hysteresis		0 to 30 °C
Charging temperature boost		0 to 50 °C
Max. charging temperature		20 to 130 °C
Lag of storage tank charging pump		0 to 10.0
Sustained DHW temperature		5 to 90 °C
Max. return flow temperature		0 to 90 °C
Solar pump ON		1 to 30 °C
Solar pump OFF		0 to 30 °C
Max. storage tank temperature		20 to 90 °C

Function block parameters (CO4)	Level 4	Range of values
Limiting factor (F03 - 1)		0.1 to 10.0
Analysis to terminals 03/13 (F04 - 1)		AnA, bin
Stop parallel operation in case of deviation (F06 - 1)		0 to 10 min
Flow limit temp. f. parallel pump operation (F06 - 1)		20 to 90 °C
Activate priority in case of deviation (F08 - 1)		0 to 10 min
Correction factor (F08 - 1)		0.1 to 10.0
Activate priority in case of deviation (F09 - 1)		0 to 10 min
Proportional gain K_P (F12 - 1)		0.1 to 50
Reset time T_N (F12 - 1)		1 to 999 s
Derivative-action time T_V (F12 - 1)		0 s; Do not change!
Valve transit time T_Y (F12 - 1)		5 to 240 s
Hysteresis (F12 - 0)		1 to 30 °C
Min. ON time (F12 - 0)		0 to 10 min
Min. OFF time (F12 - 0)		0 to 10 min
Max. system deviation (F13 - 1)		2 to 10 °C
Day of the week (F14 - 1)		1–7, 1 to 7
Start time (F14 - 1)		00:00 to 23:45 h
Stop time (F14 - 1)		00:00 to 23:45 h
Disinfection set point (F14 - 1)		60 to 90 °C
Set point boost (F14 - 1)		0 to 50 °C
Hold time of disinfection temperature (F14 - 1)		0 to 255 min

Parameters in level 5

Parameter (PA5)	Level 5					Range of values
Vacation						01.01 to 31.12
Vacation period, Start						01.01 to 31.12
Vacation period, Stop						
Assignment to control circuit						Rk1, Rk2, Rk4
Vacation period, Start						01.01 to 31.12
Vacation period, Stop						
Assignment to control circuit						Rk1, Rk2, Rk4
Function block parameters (CO5)						
Start summer mode (F04 - 1)						01.01 to 31.12
Number of days until activation (F04 - 1)						1 to 3
Stop summer mode (F04 - 1)						01.01 to 31.12
Number of days until deactivation (F04 - 1)						1 to 3
OT limit value (F04 - 1)						0 to 30 °C
Delay (F05/6 - 1)						1 to 6 °C/h
Frost protection limit (F09 - 0)						−15 to 3 °C
Max. limit value (F10 - 1)						3 to 800 $\mathrm{pulse}/\mathrm{h}$
Max. limit value heating (F10 - 1)						3 to 800 $\mathrm{pulse}/\mathrm{h}$
Max. limit value DHW (F10 - 1)						3 to 800 $\mathrm{pulse}/\mathrm{h}$
Limiting factor (F10 - 1)						0.1 to 10.0
Lower measuring range value (F11 - 1)						0/4 mA
Upper measuring range value 20 mA (F11 - 1)						0.01 to 650 m^3/h
Max. limit value (F11 - 1)						0.01 to 650 m^3/h
Max. limit value heating (F11 - 1)						0.01 to 650 m^3/h
Max. limit value DHW (F11 - 1)						0.01 to 650 m^3/h
Limiting factor (F11 - 1)						0.1 to 10.0
Input (F12 - 1)						bin, Ana

Binary input bE (F12 - 1)		1, 0
Max. limit value (F13 - 1)		0.1 to 6500 kW
Max. limit value heating (F13 - 1)		0.1 to 6500 kW
Max. limit value DHW (F13 - 1)		0.1 to 6500 kW
Limiting factor (F13 - 1)		0.1 to 10.0
Binary input (F15 -1)		1, 0
Lower transmission range (F23 - 1)		−30 to 100 °C
Upper transmission range (F23 - 1)		−30 to 100 °C

Parameters in level 7

Function block parameters (CO7)	Level 7	Range of values
Device bus address (F01 - 1)		Auto, 1 to 32
Device bus address (F03 - 1, room panel Rk1)		Auto, 1 to 32
Device bus address (F04 - 1, room panel Rk2)		Auto, 1 to 32
Register no. (F06 - 1)		1 to 4
Register no. (F07 - 1)		1 to 4
Register no. (F09 - 1)		1 to 4
Register no. (F10 - 1)		5 to 64
Register no. (F11 - 1)		5 to 64
Register no. (F13 - 1)		5 to 64
Register no. (F14 - 1)		5 to 64
Register no. (F15 - 1)		5 to 64
Register no. (F17 - 1)		5 to 64
Register no. (F20 - 1)		5 to 64
Register no. (F21 - 1)		5 to 64
Register no. (F22 - 1)		5 to 64

Rotary switch settings

Parameters	Top rotary switch							Range of values
Day set point								0 to 40 °C 5 to 130 °C
Night set point								0 to 40 °C 5 to 130 °C
Times-of-use	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
Start of first time-of-use								0:00 to 24:00 h
End of first time-of-use								0:00 to 24:00 h
Start of second time-of-use								0:00 to 24:00 h
End of second time-of-use								0:00 to 24:00 h
Start of third time-of-use								0:00 to 24:00 h
End of third time-of-use								0:00 to 24:00 h

Parameters	Middle rotary switch							Range of values
Day set point								0 to 40 °C 5 to 130 °C
Night set point								0 to 40 °C 5 to 130 °C
Times-of-use	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
Start of first time-of-use								0:00 to 24:00 h
End of first time-of-use								0:00 to 24:00 h
Start of second time-of-use								0:00 to 24:00 h
End of second time-of-use								0:00 to 24:00 h
Start of third time-of-use								0:00 to 24:00 h
End of third time-of-use								0:00 to 24:00 h

Parameter	Bottom rotary switch							Range of values
DHW temperature								20 to 90 °C
Times-of use	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
DHW heating								
Start of first time-of-use								0:00 to 24:00 h
End of first time-of-use								0:00 to 24:00 h
Start of second time-of-use								0:00 to 24:00 h
End of second time-of-use								0:00 to 24:00 h
Start of third time-of-use								0:00 to 24:00 h
End of third time-of-use								0:00 to 24:00 h
DHW circulation pump								
Start of first time-of-use								0:00 to 24:00 h
End of first time-of-use								0:00 to 24:00 h
Start of second time-of-use								0:00 to 24:00 h
End of second time-of-use								0:00 to 24:00 h
Start of third time-of-use								0:00 to 24:00 h
End of third time-of-use								0:00 to 24:00 h

Index

Key number: 1732

Type 1

WW

VF4   ZP   SF1

BE			
BA		●	
AE	●		●
RK			

Type 2

WW

KW

VF4   SLP   SF2 ZP SF1

BE					
BA		●		●	
AE	●			●	●
RK					

Type 3

Solar collector

WW

KW

VF3   BA9   SF2   ZP   SF1

BE					
BA		●		●	
AE	●		●		●
RK					

Frequently used abbreviations

AF	Outdoor sensor	*Kl*	Terminal	*TLP*	Exchanger charging pump
Anl	System	*KW*	Cold water		
BA	Binary output	OT	Outdoor temperature	*TWE*	Domestic hot water
BE	Binary input	*PA*	Parameter level	*UP*	Circulation pump
CO	Configuration level	*RF*	Room sensor	*VF*	Flow sensor
DHW	Domestic hot water	*Rk*	Control circuit	*WE*	Default setting
EB	Mounting and Operating Instructions	*RüF*	Return flow sensor	WW	Hot water
		SF	Storage tank sensor	ZP	Circulation pump
F	Function block	*SLP*	Storage tank charging pump		
HK	Heating circuit				
GLT	Building control station	*t*	Time		
		T	Temperature		

EB 5575 EN

2014-03